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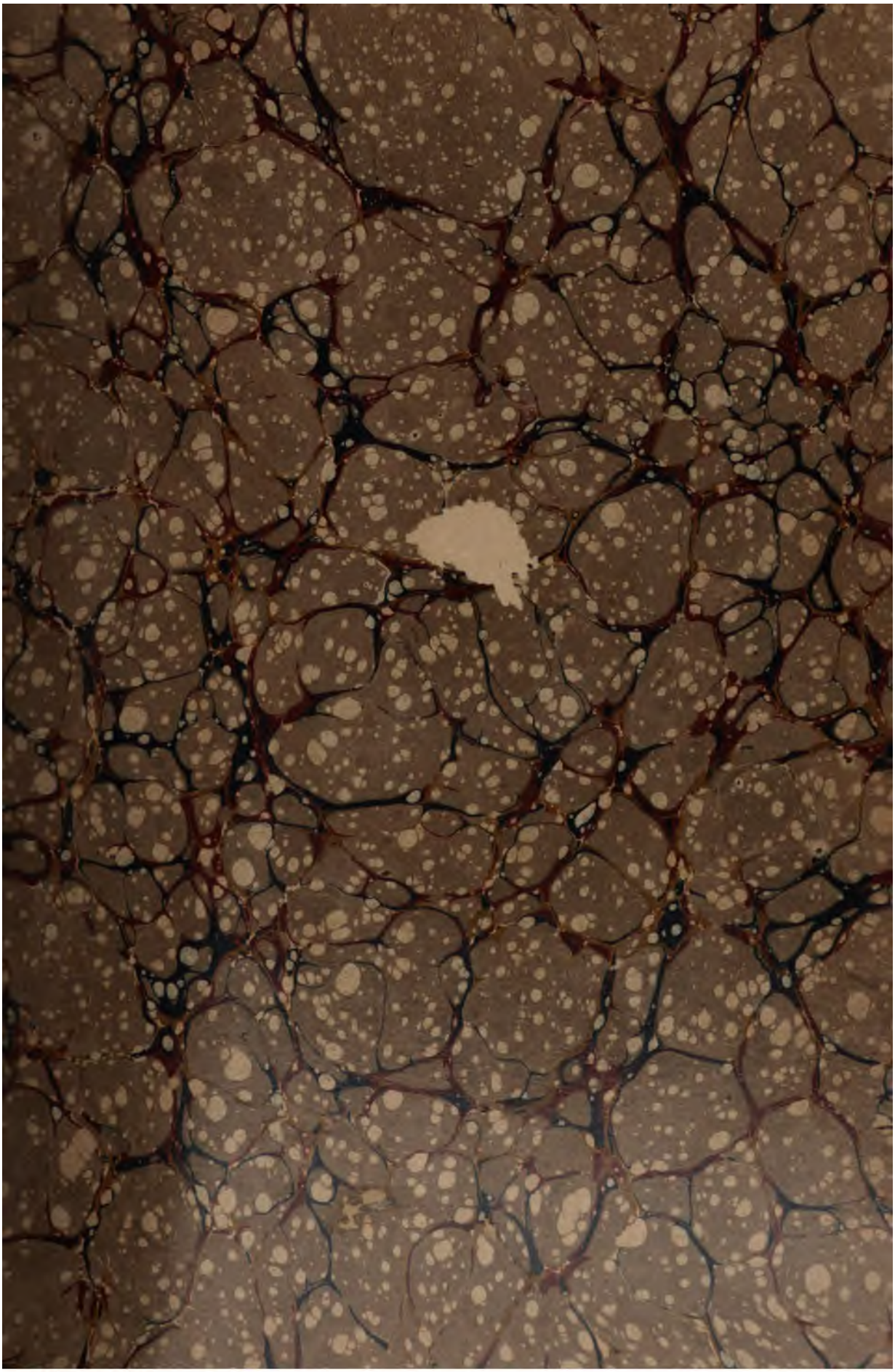

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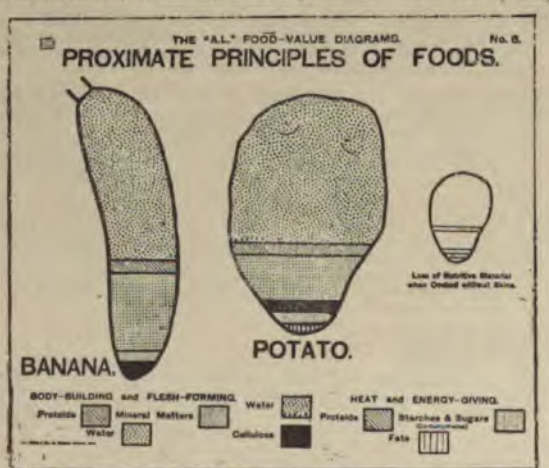

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n order that the highest condition of health he children of this generation may be secured, ain existing methods incidental to education t cease summarily and finally. Routine, when rigidly followed, tends to prevent the percep-of defects, and, while it is imperative in ol organisation, it should obviously be sub-ary to progress.

he most important duty of the educator lies igilant care that no injury, consequent upon ty conditions of life, is caused to the child's ent body and mind while committed to his ge. If this harm occur, the physical founda-of future development and full exercise of lty is impaired, for errors ensuing during the tic period of life seldom, if ever, admit of plete repair.

he *amount of work* levied from the child at ol is of paramount importance; no less so the *od of the day* when it is exacted. It is one he most obvious physical laws of nature that nature organs are incapacitated and deteri-ted by excessive work, while they are de-veloped and rendered vigorous by sufficient, healthy, and *gradual* exercise—in fact, this is the only mode in which they can be developed to their highest standard. But the exercise must be progressive, not uniform, for mental and physical exertion adapted to a child is not sufficient for youth, and exercise suitable for youth is inadequate for the adult. It is one of the chief functions of the competent educator to graduate the training of the brain from short and easy tasks to more difficult and strenuous efforts. It is, however, constantly overlooked that the young are devoid of the power of sustained attention and endurance, which is only elicited towards the end of the period of education. Yet in the primary schools children of five years of age work exactly the same number of hours as those of fourteen; in the high-class preparatory schools those of nine are detained in school for the same number of hours as those of fourteen; while in the secondary schools children of fourteen are assigned an identical number of hours with youths of nineteen. It is absolutely certain, nevertheless, that the child whose strength is not over-taxed will perform more effective work in four or five hours than one who is wearied can accomplish in seven or eight hours. And it is an indisputable fact that the best work of the *term* follows the first few weeks after the vacation; the best work of the *week* is done on Monday and Tuesday after the rest on Saturday and Sunday; and the best work of the *day* is that performed during the first two hours of the day after the night's rest. The adherence of so many teachers to the early lesson before breakfast rests on a perverted perception of this latter fact, for the two morning hours *following* a good breakfast and a longer period of sleep are undoubtedly more productive of fruitful work which exhibits the keener intelligence and firmer grasp. If this be not admitted, I would cite in testimony the public day-schools, where work does not commence until after breakfast, and I would confidently ask, Do the public boarding-schools, where lessons begin at 7.15 or 7.30 a.m. before breakfast, produce, proportionately, a larger number of scholars, and of a higher type, and more capable men of the world?

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The custom of work before breakfast involves a practice which is severe and two-fold.

(1) The young are extremely sensitive to cold, especially when accompanied by want of food. Both of these causes entail depression of the vital powers, with consequent poor health, and thus render the system more susceptible to disease. Cold kills the young sooner than the adult, and the young die of starvation much more rapidly than those who have arrived at maturity. The prime fact in the feeding of youth is the necessity of short intervals between meals, on account of their quicker digestion and their naturally greater demand for food, which in their case is required to fulfil the double function of restoring the loss resulting from "wear and tear" and of aiding physical growth. Moreover, their food supply should always be given in advance, so that they may possess a fund on which to draw for energy, without using material which has been expended upon the formation of tissue.

(2) The early "first lesson" curtails time which should be allotted to sleep. It is a deplorable fact that in the organisation of schools it has ever been the custom to adapt the hours of work and sleep to the requirements of the seniors, regardless of this erroneous practice upon the health and staying-power of the juniors. Seeing that upon the wise physical training of the younger children at school depend both the energy of early manhood and the endurance of later years, it has always appeared to me to be no less inexplicable than unfortunate that so meagre an attention—if attention, indeed, it may be called—has been devoted to the judicious assessment of their periods of work and sleep.

The difficulties which attend this urgent reform—difficulties which should be promptly and resolutely faced—can be met in many ways. The younger children should go earlier to bed; no evening task to prepare, and no work before breakfast should be required, while the morning and afternoon hours of work should be shortened. Work, by the existing routine, trenches upon the time demanded for rest, recuperation, and exercise, with the result that nervous energy is uselessly dissipated; and the younger the child the more disastrous is the effect produced.

It is quite clear that if the first lesson before breakfast presses injuriously, as undoubtedly it does, on the younger members of schools, the school authorities should perceive in the fact an instant duty of reform in the provision of a longer period of rest.

And as a guide in this direction I append the following table:—

THE HOURS OF WORK AND SLEEP ADAPTED TO TH AGES DURING THE PERIOD OF EDUCATIO

Class of School	Ages of Pupils	Hours of Work per day
	Years	
Nursery	From 0 to ½	0
	,, ½ to 1	0
	,, 1 to 2	0
	,, 2 to 3	0
Infant School ...	,, 3 to 4	0
	,, 4 to 5	0
	,, 5 to 6	1
	,, 6 to 7	1½
	,, 7 to 8	2
Primary School	,, 8 to 9	2½
	,, 9 to 10	3
	,, 10 to 12	4
	,, 12 to 14	5
	,, 14 to 16	6
Secondary School	,, 16 to 18	7
	,, 18 to 19	8
University	,, 19 to 21	8
	,, 21 to 23	8

If sanatory science is to assume its place in the conduct of school-life, breakf precede work, and sleep must be apporti *rata* to the several ages of childhood and

THE STUDY OF SPEECH SOU

By Prof. WALTER RIPPMANN, M.A.

I.

THE English have often been charg speaking their own language ba with being almost incapable of pro correctly any other language. The firs is heartily endorsed by every teacher tion, the second by many a teacher of languages. It may be of some interest sider whether there are any means of re the defect indicated.

As a preliminary, it will be necessary t some idea of the stages through which in acquiring such command as we may over the sounds of the mother tongue.

The young child hears certain sounds fr repeated, and sees the movement of the crying it makes use of the vocal chor imitation it learns to use its lips also, duces its first speech sounds—the comb *ma* and *pa*. It utters many other sour muscles serve to produce them in great and it seems to show no particular prefer any of them. Its ear is untrained, and distinguish sounds carefully.

In course of time, after innumerable re of the same sounds, the little child c imitate them pretty well. Some sounds used to produce it does not hear, and t ceases to produce them; other sounds common, and are consequently produc often. The result is that certain muscle come into play, and others are in const The child acquires habits of speech.

his is entirely the result of imitation, and, of rse, the speech of the child reflects the speech hose surrounding it. If the child is left mainly nurse who speaks badly, it cannot be expected peak well. If it is largely in the company of -educated people, its speech will show their ience. The longer it associates with certain ple, the more frequently it will imitate their ts of speech, and the more firmly rooted its habits will become.

ter learning by the ear only for some four or ears, the child goes to school, and is brought to face with language from an entirely ent point of view. Hitherto it has heard ds; now it meets with letters. What is their ion to the sounds?

e object of writing is to record speech, and original object of letters was to represent ds. This is still their ostensible object; but ny cases they do so in a most unsatisfactory ner. The spelling of English is an extreme nce. If we lay it down as a principle that sign should represent one sound, and one d only, then our spelling is a singularly rfect means of representing our speech. unnecessary to quote instances of the in-uracy of our spelling, but it is worth while alise the two causes to which it is due.

the first place, the language has changed, the spelling has not kept pace with these ges. We write words with letters which re-nt a pronunciation current long ago. We nost conservative in our spelling, but very ressive in our speech.

the second place, attempts were made at us times to make the spelling do something than represent sounds; it was thought that ould also be a guide to the derivation of a . Men who knew Latin regarded it as a sign norance to spell *doubt* without the *b*, and so inserted it, although they did not go so far pronounce it. They added the *c* in *perfect*, n this case the pronunciation was affected by action.

e result is that in many ways the written uage no longer coincides with the spoken. omplicate matters still further, every letter eceived a name which necessarily gives only f its various values. Thus, the letter *i* was a name which represents its value in *bite*, ot in *bit* or *machine*; and its name also re-nts the sound of another letter (*y*) in certain (*e.g.*, *my*). The *k* sound is represented by *ck*, *qu*, *ch*. It is unnecessary to adduce er examples to show that our spelling is a imperfect instrument.

re we, then, to join the spelling reformers? resent their efforts are unheeded or ridiculed. ome extent their writings do not inspire con-ce; they often propose changes which only the fringe of the evil. Half-hearted ures are worse than useless; if the spelling be reformed at all, it must be done thoroughly scientifically. For this the nation is by no means prepared; it clings with great tenacity to the conventional form of the written language. The idea of the Bible or Shakespeare appearing in a phonetic transcription still smacks of sacrilege. Under these circumstances, it is best to realise that the first task of the spelling reformer is to make people willing to accept the change he has at heart, and this can best be done by teaching them how the language is spoken.)

To return to the child. On entering school it meets with the written language. Miss Dale has shown that it is quite possible to start from the spoken language in teaching the written; those words only are taught at first in which the spelling may be called regular—that is, in which the signs are used to represent sounds consistently. In this case, what the child knows (the spoken language) is made the starting-point for teaching what is new (the written language), and this is the only method defensible from an educational point of view. In this way the reasoning powers of the child are directed to the individual sounds, which are quite familiar to it, but which it has not yet learnt to consider separately. This has a remarkable effect in training the ear; the child acquires the habit of discriminating the sounds of speech, and of articulating more carefully.

But in nineteen cases out of twenty (or ninety-nine out of a hundred?) the method employed is a very different one. There is no natural transition from the known to the unknown. The conventional names of the letters are taught, and the sequence in which the new signs are acquired is not determined by the mode of production of the sounds. The consequence is that the difference between speech and spelling is not bridged over; the ear is not trained; faulty conceptions of the relation between letters and sounds arise in the child's mind; and it is incapable of splitting even a simple word into the separate sounds which compose it in its spoken form.

The teacher who has acquired his knowledge of the written language in the same way is equally unable to analyse the sounds of a word. He can spell faultlessly, but he has no clear idea of the way in which the sounds are produced. When the child mispronounces a word, he will notice the mistake only if it is a striking one; his ear is not trained to detect the niceties of speech. If he wishes to correct a mistake, he pronounces the word as correctly as he can, and demands an imitation of his pronunciation on the part of the pupil; but he is unable to give any directions by which the pupil would understand the nature of his mistake, because he himself has not studied speech sounds in a scientific manner.

It may be urged that many teachers go to the trouble and expense of having lessons in voice-production and elocution, and that surely they have learnt to distinguish sounds carefully and to determine what organs of speech are needed to produce any particular sound. Some acquaintance with the works of teachers of voice-produc-

tion and elocution has led me, most reluctantly, to the conclusion that in many cases their views on the nature of speech sounds are inaccurate and misleading. I should be the last to deny that they often give most valuable advice as to the management of the voice, and that they have helped many teachers and other public speakers to avoid undue strain of the vocal organs. When, however, they approach questions of pronunciation, they often adopt an attitude which is singularly unscientific.

In saying this, I am not actuated by any feelings of hostility; on the contrary, I hope that the day is fast approaching when the teacher of voice-production will cordially co-operate with the phonetician. Both are concerned with the spoken language; both have the keen desire to make the spoken language a better instrument for the communication of thought; both desire to arouse more general interest in the cultivation of the spoken language, and to train the ear as well as the organs of speech.

The question whether the spoken language can be rendered a better instrument hardly requires to be raised; we recognise at once that some people speak well, and many badly. The important question is: How can we render the instrument better?

Those who attempt to answer the question are influenced by two considerations: the desire to improve the musical value of speech, and the desire to render it a more economical means of communication.

Those who view language mainly from the æsthetic side will search for the best way of producing fine sounds; they will study which position and action of the organs of speech produce the most musical vowels, and will pay much attention to the utterance of consonants. They will be of great service in training the actor and clergyman, the political debater and the lecturer; they will be in danger of becoming ultra-conservative, for they are likely to prefer the pronunciation of previous generations, and to assign undue authority to the written word; they will tend to give the impression of being pedantically precise in their conversational speech.

Those who view language mainly from the practical side will see in its natural development signs of progress; they will welcome anything which serves to render it easier of utterance. A reduction in the number of different unstressed vowels will seem to them a welcome simplification; they will raise no objection to the dropping of consonants, which leads to a more economical production of words; they take interest in the past development of the language, and watch its present condition, not so much with a view to improve upon it, as from a desire to record present usage, which they regard as a perfectly legitimate stage in the history of the language; they will be in danger of becoming ultra-progressive, for they are likely to prefer pronunciations which are tentative rather than established manifestations of the genius of the language, and to assign undue authority to colloquial speech; they will tend to give the impression of being slipshod when they speak in public.

Roughly speaking, the teacher of voice-production adopts the æsthetic or artistic attitude, and the phonetician adopts the practical or scientific attitude. It would be no inconsiderable gain if they learnt to appreciate the limitations of their work. Speaking as one who has given more attention to phonetics than to voice-production, I venture to believe that it is particularly the teacher of the latter subject that would benefit; for it seems reasonable to assume that before approaching the question how a language ought to be pronounced we should gain a methodical knowledge of how it is actually being pronounced. The phonetician attempts to record this, and is inevitably led also to the study of the stages through which the language has already passed. His results are the necessary basis for the work of the teacher of voice-production, so far as this is concerned with the pronunciation of speech sounds.

ON THE METHOD OF STUDYING AUTHORS: DE USU AUTHORIS. 1641.

By PROF. FOSTER WATSON, M.A.
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I.

ONE of the remarkable developments of scientific influence is the application of scientific methods to humanistic studies. In language, philological science has made great strides; in history, the theory of evolution has transformed historical studies by insisting on the principles of unity and continuity. Humanistic studies have not been dethroned. They cannot for long either abdicate or be put aside. Methods of treatment and even emphasis on the place of particular subjects may have to be reconsidered. But, pronounced as is the spirit of change, a new attitude will inevitably arise from the scientific renaissance of the nineteenth century—viz., the desire to understand more closely the significance of the older aims and methods. Amidst all the turmoil and scepticism which beset classicism at present, there is arising the sense of need to consider the old order anew. Prof. W. H. Woodward, for instance, has shown recently the meaning of the work of the classicists Vittorino da Feltre and Erasmus. We can now easily trace in their books the method of the old school-teaching. To take one instance, the disciplinary significance of the reading of classical authors, in Erasmus. What is the result of Mr. Woodward's investigation? "The general method," he says, "of Erasmus's treatment of a classical lesson reveals a remarkable touch of modern practice." We want a similarly thorough investigation into the methods suggested by Ascham, Brinsley, and Hoole, and a further inquiry to see how far the aims and methods of a Vittorino and Erasmus found their

o actual grammar-school practice. Light question can be found, I believe, from choolmasters of the period, though it re-esearch. Thomas Farnaby, for instance, section on the reading of authors in his Rhetoricus." In this paper I shall offer unt of the practice of Thomas Horne, a schoolmaster. He was born in 1610 and 1654. He was headmaster of Tonbridge from 1640 to 1648, and of Eton from 1648

book on the reading of authors is thus d :—

γωγία, sive Manuductio in Aedem Palladis: lissima methodus Authores bonos legendi tur: Opera Th. Horne, Art. Mag. Scholae lgiensis Archididascali. [With quotations Quintilian, Isocrates, and Martial.] 1st London, 1641.

work is in Latin. It is divided into gnita de Usu Authoris" and "Præ-

speaking of grammatical preparation, on of the vernacular, on the application of own languages for making the unknown on the instruments for the tyro to use in , on the application of the knowledge of and artificial things for the boy's use in , and on *manuduction* through the use of , ocular demonstration (*i.e.*, the placing nples before the eyes of boys), custom, tion, on the use of oratorical poetry, on memory, on repeated exercises, Horne ves the ten fountains of invention, which the whole area of eloquence, viz. :—

istories, such as those of Plutarch *in vit al*, Valer. Max., Herodotus, L. Florus, Justinus, Plinius, Pareus *in medulla e*, and Aelianus.

pologues and fables, such as are to be from Ovid's Metamorph., Aesopi Fab., Com. Muthol. Aethn.

dagies, as those of Erasmus, who was the pious collector of Adagies, and *illustrator demonstrat.*

ieroglyphics, in which especially the eru- of the Egyptians lay hidden, which are ntly illustrated by Pierius, Clement, Alex- is, Strom. l. 5, N. Caussinus, in "Horti is explicatione."

mblems and symbols, which were elabor- Alciat, Theod. Beza, N. Reusner. Nor is arles *politissimus* to be covered with obli- To these are to be added the "Imagines m Numinum," concerning which, see Vin- hartarius de Imaginibus numinum Ethnic- and Pausan. περὶ τῆς Ἑλλάδος διηγήσεως.

aws, customs, institutions of peoples, as of the Spartans, Athenians, Egyptians, s, which were dealt with fully by Plutarch, us Siculus, P. Manutius.

Witty sentences from the ancients and s, such as frequently occur in Tacitus, Sallust, Lipsius, Puteanus.

hetorical figures, as we have mentioned before, as to which the most illuminating writers are Aristotle, Vossius, Farnaby, Butler, Vicars.

9. Topical points *à causis, effectis, adjunctis, contrariis*, concerning which see N. Caussin., lib. 4 de Eloq., c. 13. For these subjects are not omitted by anyone who has to deal with the matter of oratory. Discourse is best amplified if the material is brought into those forms. Therefore let the boy con over what causes, effects, adjuncts, and opposing material are to be treated.

10. The whole series of natural and artificial things, as they penetrate the mind through the senses. The treatment of artificial things may be rendered useful if the objects are arranged in pictures so that they can be glanced at by the eye, and what is suitable to the boy's powers may be fixed in the memory. See N. Caussinus, lib. 11, *e.g.*, pyramids, labyrinths, temples, churches, workmen's shops, the materials for eating, variety of cloths (*ciborum apparatus, mercium varietas*), furnish many helps to *invention*.

Let those who have not kept their hand from the *ferula* begin to make trial of these authors, and let them continue to do so in college; and when time does not suffice for the reading of a whole book, let the book be divided into parts, and one part only be assigned to each boy; and afterwards let them bring together their observations and collections, *ut in collegio isto Gelliano monemur.* Let the master give his aid in this collection by explanations of difficulties, and direct the boys by looking over their work. On stated days let the teacher select the most useful subjects, and show the way of proceeding to the boys; *e.g.*, if all the fifteen books of the Metamorphoses or all the books of the Aeneid are too much to be read through, let one book be assigned to this boy, another to another; let them bring the fables or histories into summaries, and, before the master, compare their collections, so each may be aware of what his companion has read, and in this manner the whole work may have been usefully gone through for the subject in hand. These inexhaustible wells are open to all; and even as in the fable of Lucian all the deeds of the world were mirrored in the Happy Islands, so there is nothing in the whole world of oratory which these wells do not show if looked into thoroughly. It will be a work worthy for the tried wits of those whose endurance has been shown, and whose judgment is adequate, to endeavour that from these wells the little gardens of their minds may be irrigated.

If, also, the pupil meet with anything in the reading of an author which may be of future assistance, why should he not hurry to avail himself of all opportunities whenever any material steals upon his notice unawares? It should not be passed by with dry feet, as they say, but let youth insert it in a commonplace book, preserve it carefully, and use it as often as the opportunity occurs. Horne is thus conscious of the mental *discipline of rhetorical exercises.*

The basis of correct writing must be a thorough grammar, but this must be supplemented by the knowledge of authors. In the writing of compositions, inferior kinds of writing must not be neglected. But care must be given to the choice. *Colloquia* are a foundation for theme-writing. Amongst these authors, the chief for the purpose are Erasmus or Pontanus, John Lud. Vivis, Terentius. In imitation of those writers, let boys learn to compare *colloquia*, first by writing, then by holding converse with one another, for the writing of *colloquia* affords longer time for thinking to tender wits than speaking, but exercise of speaking, on the other hand, amongst themselves develops skill and confidence. In no other way can a remedy be found for that fearsome disease which invades so many schools—the neglect of Latin speech. Would that my wishes on the common complaints of men would avail with those skilled in teaching to extirpate the noxious weeds of barbarism which bid fair to ruin the prosperity of schools.

For epistles should be chosen some of the letters of Cicero to Atticus, or from Cicero to his friends. I venerate the purity of Cicero, for he who is not pleased by it despises violets and roses. Yet prolixity rarely is fit for the boyish mind, and Cicero's material is alien to the understanding of boys. For often he treats of private or forensic matters, and is only understood by those versed in such affairs. The same judgment must be made concerning the epistles of many others, if read without due selection. If Tully is not approved, then let Pliny, Politian, or Textor be selected, and from these authors let letters be chosen full of sap and conformable to the tender understanding. Otherwise you wander from the main aim. Whenever the subject-matter treated is not in agreement with the state of development of the mind of the one learning, teaching ceases and the boy does not advance and is as if stuck fast in the roughnesses of the road.

Speaking of the defects in lexicons used, Horne suggests that these must be minimised by (1) information given by the master; (2) faithful repetition and calling to mind of authors; (3) continual conversations; (4) by the choice of some book in which the whole Latin tongue is contained, such as is John Amos Comenius's (*Atlantis illius scholasticae eruditionis*) "Janua Linguarum," for so boys, by the aid of their own memory, are in place of a dictionary to themselves. After boys have run through this book once, let it be retained in memory by repeating it, amongst other works which are repeated, according to the custom of schools, before the Natalitiorum, Paschatis, Pentecostis, &c., festa.

Besides Comenius, Horne recommends the "Index Rhetoricus et Oratorius" of Thomas Farnaby, a man copiously versed in every kind of erudition, and one steeped thoroughly in literary questions. Such a book, wisely planned and arranged by such a man, cannot but be of high value. Horne's praise of Farnaby could be confirmed by much contemporary testimony.

For historical style, not far remo the epistolary, let L. Florus, Sallustius, read. They are a historical triumvira clearness is attractive, whose nervous b native purity are pleasant to all, and f boys learn to weave together accounts affairs.

For oratorical style, let the oration and Sallust, collected by Brunhard Gu chosen. They are mostly short, and n able for imitation by the beginner. C teacher prefers, let him choose Phil Cicero "pro Archiâ contra Catilinam," a harder orations. Let Quintilian be add stitutiones aut Declamationes," but let th of this be continuous and not broken. of oratorical passages should also be m Tacitus, Lipsius, Puteanus, Barclaius, Baudius, Cerda, Vernulaeus, Fortiscu gronius, Turnerus, Malsossius, Heinsius and all others, both ancient and mode contribute to the pith of Latinity, so more select discourses should be put be for them to reflect upon. To find such it will be most useful to have the "In torius" of Farnaby. When an author selected, next comes the use to which in teaching. These uses are four, viz. critical, grammatical, oratorical.

One method constantly suggested is own collection of phrases. Horne giv example:—

"I pray for your health"—for wh Latin expressions as the following may and others added, *ut cum summa curâ*:

Pro tua salute in prece totus sum. preces. Tollo ad sidera palmas. Solenn vota. Tuam salutem ore precor, corde —impense rogo.

For by this method of collection of ph style of tyros rises higher and highe fashioned to the genius of the author.

The oratorical use of authors co (1) translation; (2) observation; (3) i (4) variation and paraphrase; (5) allusio plication; (6) in abstracting or in an (7) in finding parallels and analysis.

There is no part of Horne's book more valuable. He accepts Ascham's r double translation. That most learn Ascham brought her Serene Highness Elizabeth Queen of England, and th of the weaker sex, to the highest skill and in Latin reading; nor are other effo direction in this century without merit our master, well known for his comple literary knowledge and for his industry, Woodward, whose labours both in this kind of erudition have been made manifes I hope, will even more clearly be mad to our descendants. Wherefore sh praises be given him? For he is a n Horne, as it were, a father of the comm who has bequeathed a patrimony t treasury which will enrich the old in their

youth in the development of their wits. rks will in themselves proclaim the ex- of the man, without my words.[1]

do the former merits suffer me to pass by ce the name of my most worthy master irkby, who promoted in no mean degree ours of beginners in this exercise.

e translation of any language, native pro- f idiom is exactly to be preserved, as con- arises from neglect, and all elegance s; *e.g.*, *generosus equinus* ought to be d a horse of good mettle, rather than a s horse.[2] Horne recommends Sandys's ion of Ovid and Vicars' translation of as specimens to help the pupil. For the aim in translating is to swim without et the support of a friend's hand is no ce.

Observation.

ords should be noted, and still more and phrases. 2. Errors should be cor- so as to avoid them in the future. 3. Pas- giving knowledge of persons, descriptive es, histories, customs, manners of the s, Greeks, and other nations, should be . These subjects will include topography, eeds, and observations brought under the s of names of beasts, trees, metals, ins, rivers, temples, feasts, as they occur ors. In the note-book should be written whatever explains the meaning of the or enriches the minds of the boys. Horne ves the following examples:—If the boy across the words *Pallas, Graecia, ele- aurum*—under Pallas he will put the tion of the name and its etymology, the origin, statues, varieties of names, differ- respect of inflexion from the man of like the son of Evander. Under the word can be shown its various names, and planations, the peoples which it contains, anners, positions, districts, bordering terri- states and republics flourishing in it; and under this word can be shown that this stood as the mother and nurse of civil ongst the Europeans, as the author of arts iences, the expulser of barbarism; now the iron yoke of the Turks. Under the *lephas* may be shown the sagacity of this his use in war and in hieroglyphics; and other things may be recounted from and Aelianus, most worthy of being ob- with regard to the elephant. Under the *urum* may be shown its excellence before etals, its use for the royal crowns (as the dealt with by Puteanus), and many other concerning its sources and durability. To oints should be added, in each case, the rs of all the more important things t men; for the names of authors and the circumstances of the things to be found out give much pleasure to the one who listens. Consult on this point Polydore Vergil, "De inventoribus rerum."

[1] account of Hezekiah Woodward see *Gentleman's Magazine*, oo.

[2] eph Webbe is equally emphatic on the rendering of Latin idiom idiom—in his "Appeal to Truth," 1622, and "Petition to the of Parliament," 1623.

DECORATION OF SCHOOLS.

By J. W. Holland, B.A.
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SOME people assert that the best mental work is done amid surroundings of a Spartan severity. A few schools one has seen seem admirably calculated to support that view.

Most of us, however, will agree that the school of to-day is not only a place to work in, but something much more than that; we shall agree, too, that surroundings have a strong influence on personality. So I assume from the outset that we wish to make our schools as attractive as possible, that in doing so we may help to create an atmosphere which shall develop the artistic sense of the children as well as assist the actual teaching given. Decoration in any form is so much a matter of taste that I do not propose to do more than offer a few suggestions on the points that occur to me.

I will deal first with the general decorations of the ordinary class-room. The colour of the walls, as we have to live with it so many hours a day, should have serious consideration. It will vary, of course, with the aspect of the room and especially with the lighting, but we may safely make one rule—it should never be a strong colour: rather of a quiet, restful tone, which need not necessarily be a dull, sombre one. We are all familiar with the garish pinks and Reckitt's blues of the average colour-wash, and we all hate them; but it is possible, by a judicious mixing of colours, to make of distemper a most artistic wall decoration. Not, however, if it be left to the decorator. I myself must confess to standing over him and his pail repeatedly, till the colour I wanted was produced. I mention distemper because it can be renewed frequently at slight cost. Washable paint, though more costly at the outset, if applied with a dull surface, produces much the same effect and saves the trouble of frequent renewal.

For the ordinary class-room a warm greyish green with dado in a much darker shade is very pleasing. Add to this a frieze of light buff and a cream ceiling, and you get a brightening touch. If there be much woodwork, let it be painted light rather than dark, the same buff shade if possible, or a good green. Light paint is not an extravagance; if well done it can be cleaned at intervals, and lasts for years; and children can be taught to respect their school walls.

If you are fortunate enough to find your school-rooms fitted with solid wood panelling you have indeed opportunities; if the wood be ordinary deal, let it be stained a warm brown, and any soft light tone will harmonise with it for the upper part of your walls. In rooms facing north yellow will

help to atone for the lack of sunlight, but the yellow must not be strong. A dark shade of green will show up the casts in an art room better than any other colour. For a lobby or entrance-hall, a warm Pompeian red, provided there be not too much of it, is very effective.

Floors of schoolrooms have much to answer for in causing a feeling of bareness and discomfort. We cannot all have parquet polished, but we can, at slight expense, have our ugly deal boards stained and varnished. Brunswick black thinned with turpentine makes a very good stain; this, with daily sweeping and an occasional polishing, will give a totally different look to the room.

So much for walls and floor. Desks, bookcases, cupboards, and all the usual furniture of the schoolroom, if carefully treated, may be made to fit in with the scheme of colour. Let the desks be stained dark rather than light; they wear better, and are less apt to show the ravages of ink and pencil; they will tone, too, with flooring and dado. Broad, low window-sills, if we can have them, are a great boon, providing space for plants and flowers.

Fit simple casement curtains to your windows, and you have an attractive and economical substitute for the old-fashioned blind. These can be used to exclude strong sunlight, and serve also to keep out draughts round window-frames. But again be careful about the colour. A good woollen material such as cashmere will wash and wear well.

Mantelpieces are valuable from the decorative point of view, especially if simple and good in design. A couple of bracket shelves with plain beading will suffice, but they should be of good wood. Art pottery can find its home here as well as on window-sills, and no one need regard it as a luxury so long as it can be bought in Belgium and elsewhere, good both as to form and colour, for a few pence the piece.

Even the notice board may be a thing of beauty. Not if you cover it with green baize, or even if you make it of deal, stained and varnished. The most successful notice board I have seen was fashioned out of an ordinary bath-mat; any sheet of cork would serve. It can be coloured to tone with your walls and fitted into a frame; drawing-pins are easily inserted and leave no trace behind them. The children themselves can be taught to design their monitor lists, &c.

A wood beading some six inches wide round the floor of the room and fixed to the wall effectually prevents the rub of desk against wall which is so disfiguring to the latter. A much narrower wood beading fitted to the dado line, and a second some eight or nine inches above, can be utilised to hold specimens of good work either in exercise books or on loose paper. A little care in mounting work is well expended; specimens of drawing, brushwork, &c., are much more effective if mounted on neat brown paper. This beading should run round the sides and back of the room so as not to divert attention, and also to leave the wall facing the class more or less free blackboard.

Now as to what we shall hang on our Whatever else we hang there, let us no maps, permanently at any rate. Pictures have by all means. "A room without pict like a house without windows or a garden flowers." But let the pictures be few an if we cannot afford to spend much. Let t chosen with a view to familiarise the c with what is best in art, rather than to l the history, literature, or geography lesso can have plenty of cheap illustrations fo use to emphasise particular points. series of educational pictures, illustrating and geography, may be put to very good this way. But let the pictures which are a permanent place on our walls be reprod of the best work of the best artists. It i possible to procure these among the many of reproduction now on the market. Let examples of the Italian, Dutch, Flemish, G French, as well as British schools, old side by side with the work of living artists.

It is a good plan to have the title and name on a small label at the foot of each p it rouses a personal interest on the part children. If you *expect* your children to kn pictures in their rooms, and occasionally them about them, you will rouse further i Some schools award pictures as form pr sports; such pictures are greatly treasure the class-room we should have as much as possible—figures, landscapes, &c. F school hall striking figure subjects and pc Vandykes, Rembrandts, &c., will be mos tive. Somewhere on our walls, too, photo of famous places in Italy and Greece and brated pieces of sculpture should be found choice is so wide that it seems useless to individual pictures, but I have always fou the children are especially delighted with a duction of a picture they know. Take then National Gallery, and they will soon t what picture they would like next. Or, case of the little ones, suggest subjects, a will generally choose something that be what they have been learning—"The Princes in the Tower," for instance, "Th dren of Charles I.," or "When did you l your father?"; even the babies in the garten will delight in these. Landseer's a too, appeal to them strongly.

The middle school will probably like p of the Armada and portraits of national he we are choosing for girls, portraits by borough or Reynolds, Greuze heads, T landscapes. "The Canterbury Pilgrim generally a great favourite. Not until the the upper school will they care for R Burne-Jones, Briton-Rivière. These can bought for nothing, but some forms of re tion are less costly than others. The fo firms may be relied on to give good value wide choice:—

erry Pictures Company has a very cheap collotypes, size 12in. by 16in., costing for a set of eight. These include re- ons of Raphael, Vandyke, Gainsborough, Reynolds, Hofmann, and others. Some are very good, others have rather a hard a careful selection must be made.

. W. A. Mansell and Co., 405 Oxford V., claim to have the largest collection of nt and ordinary photographs from pic- escoes, and statues at home and abroad, nd modern, and, indeed, their list seems The photographs vary in size and price. also makes a speciality of artistic frames ate prices.

eproductions of the Autotype Company, Oxford Street, W., are among the best, permanent. They can be had in a variety —black, sepia, sienna, charcoal, &c.— which has its particular charm. A size, 18in. by 12in., costs about twelve but a discount of 25 per cent. is, I granted to schools.

atinotype photographs of Mr. F. Hollyer, roke Square, W., are more expensive, works of art in themselves. Mr. Hollyer oduced most of the works of Burne-Jones, G. F. Watts, Holbein, and Botticelli.

Art for Schools Association, Passmore Settlement, Tavistock Place, W., aims ducing works of art specially suitable for in the form of photographs, etchings, gs, &c., and sells them at reasonable It occasionally lends and gives framed poor schools. It issues a catalogue with list of works; among them may be found of pictures by great artists on historical and a long list of portraits. The photo- f the Hellenic Society are included among antique sculpture and architecture.

ABORATORY NOTE-BOOKS.

By C. E. Browne, B.Sc.
enior Science Master, Christ's Hospital.

n what is true in order to do what is right."

Introduction.

S motto might be very well adopted by all cience teachers for an inscription over their aboratory doors as expressing the object teaching, and the justification of all the pent in the equipment of their workshops. arn what is true, the learner must be to recognise truth, however presented. rom actual experiment and observation, themselves are limited in the life of the al, we have to depend upon books, upon or the greater part of our understanding, becomes of prime importance that the should from the first learn how to inter- use words correctly.

ost important function of science teachers of training the reasoning faculties, and therefore of training in the right use of words, of developing the power to express ideas in simple, accurate statements. In no other department of school work can the connection between thought and things be more easily brought home to the mind, and in no other way can the subtle differences between allied words or phrases be so amply illustrated by experience as in a science workshop.

In the description of simple operations of experimental science demands are made on a pupil's mental powers of the same order as in the translation of a foreign language, but with this difference—he sees *things*, not words, and has to cast about for an expression which properly describes them. I know that in the past this side of science teaching has not been much attended to, and it is for this reason that science has not made more progress in the estimation of those who have only known a classical training.

Science training implies not only a training in exact measurement and in accurate observation, but also in correct reasoning and in exact description of experience. Accuracy in expression is fully as important as accuracy in the work itself. In fact, experimental work shorn of its reasoning basis—as it too frequently is, so far as the pupil is concerned—cannot be called science at all. Even here misconception may arise. A teacher may link his facts together by the most careful reasoning; text-books may be used with which, for scientific treatment, no fault whatever can be found; yet, so far as the pupil is concerned, not a ghost of reason may have entered his mind from one or other of the sources of instruction. Only so far as he can be led to put two and two together himself, by examination of his own work or that of others, will he truly gain power to reason correctly—to judge for himself likeness and unlikeness, and, lastly, to generalise from a series of established facts.

Hence the paramount importance of a properly kept note-book, not for notes dictated by the teacher, but for expressing the pupil's own ideas, clumsy and incorrect as they may be at first, when he tries to put into words what he himself thinks, for recording his own experiences—failures as well as successes.

When it is considered how universal is the necessity for this training in clearness of expression, which is equally required in commerce, law, and politics as in science and literature, a training in the use of the mother tongue becomes an essential factor in all true education.

On these grounds alone science work justifies its place in the school curriculum. Quite apart from the many other interests it serves, the opportunities it affords in respect to such literary training are unique and far-reaching. With this ideal before us it is very necessary that laboratory notes should be carefully compiled, fully criticised, and corrected.

Kind of Notes.

The kind of notes that should be required from the pupil depends, of course, on the method of work and the ultimate object of the teaching.

In all the following remarks it is assumed that the aim of the teacher is the training in scientific method and all that this implies, and not that of preparing for examination on any limited number of facts, as demanded by an examination syllabus, or arbitrarily selected by the authors of text-books.

Notes must be, in the first place, the result of individual effort on the part of the pupil. Dictated notes are generally a delusion and a snare. The only possible exception, and then it is of doubtful benefit, would be to offer an occasional alternative to an otherwise crude statement on the part of the pupil. It is best to discuss the statement, criticising various forms, and leave it to the class to adopt what form they please. It is the effort to describe adequately what is seen, felt, or believed that constitutes the backbone of the literary part of the training, together with the criticism on the part of the teacher and others.

To obtain a concise but complete and faithful description of any apparatus or operation from boys of almost any age is quite the hardest part of the science master's labours. It applies equally whether the boys have a classical training or are brought up on French and German, and in this respect supplies the strongest argument for laboratory work throughout the school. The best value is only attainable when the pupil has to describe something he has not seen or done before. The plan followed by so many teachers, of lecturing to their class and actually performing the experiment which each member has to repeat by himself, is fatal to the object referred to above, viz., that of finding words wherewith to describe things and ideas. Nor are text-books allowable in the early stages if the effort is to be real. There must be no copied expression until after the effort has been made, when discussion and criticism may have remodelled the statements.

It will be recognised that there are two stages in the note-making exercise :—

(*a*) *The Working Note-book Stage.*—Notes written at the time of the experiment, consisting for the most part of a brief statement of the object of the work, observations, measurements, and sketches. These notes should always be dated, written in ink, and seen by the teacher if possible at the time of the experiment.

(*b*) *The Essay Stage.*—Notes written afterwards, generally during the evening preparation, and based on the working notes, consisting of a connected account of the work in historical order.

The complete record of the work thus compiled should present :—

(i) The reason or motive that led to the problem, thus linking up continuously the work as it proceeds, and unobtrusively and naturally compelling revision of past work.

(ii) The object of the actual experiment described.

(iii) Description of apparatus, operation, and results, with sketches.

(iv) Criticism or comments on the results obtained, showing how far the object of the ment has been achieved, and setting fo pros and cons as to the interpretation o of results.

Age, experience, and the average abili class will determine the literary style, a modify very largely the amount of inde composition possible. Three stages of p may be roughly defined as—junior, ages 12 years; intermediate, ages 12 to 14½ senior, ages 14½ to 16½ years. Beyond work assumes a more advanced and te character.

In the junior stage it is possible to in all the fundamental problems on the measu of length, area, and volume in a simple n form. The groundwork laid then, howeve the effort, gradually leads the child, by t the intermediate stage is reached, to wo a motive, and to treat the actual experin a means to an end, and not, as so often case, as the end itself.

In the senior classes the written work be assume a less formal arrangement; much detail of apparatus and operation is no needed, except when required to explain e differences; but the use of reference bo enlarging their acquaintance with any subject they have been attacking experin becomes necessary, and quotations from within limits, in amplification of their o perience, leads to the proper method o text-books. The books are read incident a result of their own work, and not as th to their work.

In a school where all elementary sci taught through the boys' own experien following facts about the note-books used of interest to readers of THE SCHOOL W

KINDS OF NOTE-BOOKS.

The note-books themselves are of two k

(1) The "Working" note-book, ruled t out in light blue ¼in. squares, of 120 stoutly bound with cloth backing (8in. × 6

(2) The "Record" book of 240 page larly ruled and stoutly bound in stiff covered boards (9½in. × 7½in.).

Both books have gummed labels attac inscribing name, address, form, &c. A s such labels is kept for probable change before the book is full. These books can tained from the Educational Supply Asso Holborn Viaduct, E.C.—No. 1 for 48*s.* pe N. 2 for 84*s.* per gross.

The ruled squares are large enough written work and tabulation of results. may also be used for curves. It is con best to have the usual curve paper i sheets, which can be gummed into the boo required. It has also been found useful the sketches and diagrams drawn on s paper and inserted where required. The size of the "Working" note-book is foun an advantage, as taking up less room w

is about, and for carrying out Captain advice—"When found make a note of." the "Record" book is commenced the may suggest that it is to be written for on as a text-book, as a diary, or a thus helping to foster a useful spirit of id exactness which is otherwise difficult n. There is a danger of labouring this d" to produce a show at the expense of eful effort, but the danger is not a serious teacher is in earnest. A little thought and nt in arranging the work in a methodical is not to be despised, for pride of pro- is a real incentive where the subject- largely original.

Record" is divided into chapters to mark pletion of each principal investigation. in the "Record" are the tabulated ts of class results and the conclusions or based upon them, and at the end of each a summary of facts learnt during, or as of, the investigation, is drawn up.

xtent to which it is possible to conduct on these lines depends, in the first place, conditions as to time allotted for the the time-table, the co-operation of other nts, and the estimation in which the held by the authorities; in the second on the methods adopted for carrying on k, the experience and ability of the and the value attached to the work by ls; lastly, upon laboratory accommoda- ipment, size of class and staff.

ld take too long to discuss even briefly rious points, all of which are more or ntial if science is to be an educational or schools. It will be necessary, how- t three conditions be emphasised briefly terary work is to be carried out pro-

e minimum time allotted to science ever be less than three hours per week r classes, four and a half for inter- classes, and six hours for senior classes.

e number of boys in a class under one ust be strictly limited. Twenty in the niors, and fourteen in the higher classes, looked upon as quite the maximum.

e class-time of a science master ought ceed eighteen hours per week, the rest e being required for testing new methods preparation of apparatus, and the ardu- of supervision of note-books.

economy of time and energy might be y the co-operation of other departments work; the intensive method applied to nt, and a well-defined educational policy the whole together.

titude of the pupil towards his work is is progress in scientific method, and can cultivated through the note-book and omposition. At the same time it must bered that the work itself must be kept the notes made subordinate to the spirit mental inquiry; the teacher must not expect perfection, but must regulate his demands for correct notes, &c., by the many circumstances that completely control the work, and only in the senior classes should he expect completeness of treatment, by those who have grown to the system adopted. To some extent much can be done in this respect by a discrimination of what is essential in the work itself. Any problem attacked bristles with interesting developments, but while the brighter boys may be expected to follow up any side issues, the class as a whole can be guided along the main line of thought suggested in the motive previously expressed, and, as that line of thought reaches its natural goal, the teacher by his questioning may help to concentrate attention on the points that lead to the most instructive problems, unless, as often happens, the new motive comes spontaneously from one or more members of the class. Text-books or examination syllabuses are no criterion as to what is essential; that must be decided by the teacher in his estimate of the intellectual abilities of his pupils.

To keep the written work up to an efficient standard, very considerable driving-power is required. The source of this power is supplied (i) by marks and criticism; (ii) by the interest of the pupil in his work; (iii) by the value attached to the science work in the school generally.

The notes must be marked regularly, and important errors pointed out next time the class meets. It is little use correcting errors out of class-time, but the chief ones should be noted at the time of marking; common errors should form the subject of discussion with the class.

The labour involved in dealing with many books is exceptionally heavy, since it is necessary to check not only errors of facts and composition, but also of reason and method. It is therefore absolutely essential that time should be specially allotted for this work on the time-table. It would be of very great advantage if, instead of evening preparation in science, the equivalent time were given during school hours, with the science master in charge, thus giving him opportunity for marking the note-books of that or any other of his classes, an exchange being effected with those subjects which are more easily corrected and require longer evening preparation.

The third condition making for efficiency, viz., the estimate put upon the science work by the authorities of the school, and its value to the boy as affecting his chances of promotion, are more far-reaching than is realised. The Cinderella of the school curriculum—Science—has suffered much by the contempt, or slight, of those who have usually controlled or influenced the school policy. Mistakes as to the true function and high possibilities of school science have been made in the past, but it is hoped that as our experience grows we shall soon convince our most prejudiced critics that the "science workshop" stands second to none as a training-ground for the highest mental and moral development of the young.

GLOBES AND MECHANICAL MODELS IN THE TEACHING OF GEOGRAPHY.

By J. W. JARVIS,
St. Mark's College, Chelsea, S.W.

I.

FROM Miss Barbara Pinkerton's "billet" to John Sedley, Esq., we learn that in Miss Amelia Sedley's geography "there is still much to be desired," though those were the days when young ladies were taught "the use of the globes and deportment." Since then publishers have been busy, atlases have been placed in the schoolboys' hands, maps are issued in the daily papers, but few care to use or can use a globe. Geography-teaching, however (thanks to the Geographical Association), has improved, and just as all roads lead to Rome, so does all good geographical teaching lead to the use and study of the globe. An outward sign of this is shown by the activity of the globe-makers, and no fewer than 500 globes have been placed in the schools under the control of the London County Council.

To attempt a logical division of the kinds of globes offered for use in schools would be impossible. The sorts overlap, differ slightly, and fulfil varied objects, but practically they can be included in the three classes: relief, smooth, and slate globes. In relief globes the mountains stand up in considerable relief (of course, out of all proportion), thus showing clearly the valleys, watercourses, plains, &c. These are specially suited for the study of physical geography. As a rule the mountains are carefully modelled and coloured brown, the plains are white, and the low-lying lands green, in accordance with the best traditions of the great German map-designers.

The price of such globes varies with their sizes and with the simplicity or elaborateness of the pedestals upon which they are mounted. Messrs. George Philip and Son, 32 Fleet Street, E.C., supply them from 12in. in diameter for £2 up to 26in. in diameter for £12 12s. The intermediate size of 16in. costs £4. Messrs. Ruddiman Johnston, 52 Hatton Wall, E.C., have a 15in. relief globe with simple fittings at £3, but with a complete brass meridian, compass, horizon, and time-dial at £4 10s. To get an idea of a 15in. globe our readers are recommended to open THE SCHOOL WORLD flat and to hold it side uppermost. A globe with a diameter the same size as the length of THE SCHOOL WORLD can be bought for £1 15s. from either firm, and a small one, only 6in. in diameter, costs 12s. 6d. Neither of these is large enough for class-teaching purposes. It is interesting to remember that relief globes are specially used for teaching geography to the blind.

Smooth globes are well known. They are practically maps of the world on a spherical surface, and they show the political and oceanic divisions. The more elaborate have the routes of steamers, *cables, principal railway and* telegraph lines marked upon them. Indeed, they are full of information that very close ins nearly always necessary, and they are n for library than for school purposes. library 30in. globe, on a three-legg with a brass meridian, costs £16 16s., publishers have endeavoured to constr more suitable for class-teaching purpos general use in schools, and, naturally, a rate. They show the position of the and oceans with sufficient clearness t by a large class, and also indicate currents. The outlines are very bold, necessary detail is given. Messrs. Leeds, sell such an 8in. globe with a brass semi-meridian on a wood stand f a 14in. globe for 24s. Messrs. Ph globe, with a brass meridian fitted to wood pedestal stand, costs 15s., and i most favourably with the highest clas of Continental cartographers. Messrs. Johnston claim that their globes are breakable, and their prices vary fro globe at 7s. 3d. to a 12in., with meridian, for a guinea and a half. stands firmly on a three-footed pedest metal, and the axis of the world i vertically. Messrs. W. and A. K. Jo 7 Paternoster Square, E.C., have p the market a "New Century" glob diameter. It shows the latest chan history of the world; the British poss coloured red, and ocean currents and lines are marked. It has a strong n meridian, the stand is of heavy met price is £1 1s. This firm is well kn careful printing and colouring.

An ideal globe would be one whic suspended in the air with its axis ab from the vertical. As a rule, globe ported in this position, and this, co their weight, makes them rather fra ments in a class-room. A three-legge recommended, though the circular top of the globe in the same way that Sat hide part of that planet. It certain from the idea of floating in space, but t are stronger and the apparatus ca useful work. Advantage is taken of surface of the rim to show the signs o and other celestial measurements. Me and Messrs. W. and A. K. Johnston 18in. globe, strongly mounted and printed, for about £5, and this prob sents the most useful form for school

Classes are, as a rule, too large for globe-teaching. Groups of four bo best, and if these are permitted to sp hour occasionally, under the direction round a big globe, a great deal of formation can be imparted in an pleasant manner.

Slate globes are not made of slat composition which is coated with similar to a blackboard, on which

of the earth with its mountains and rivers can be drawn. The lines of latitude and longitude are clearly traced in red on the black ground of the globe, and each globe is provided with a chalk, pencil, and sponge. Such blank globes come in useful for teaching spherical trigonometry. Their prices vary from 23s. to 70s., and for an extra 20s. the makers (Messrs. Ruddiman Johnston and Messrs. G. Philip and Son) mark the outline of the continents upon them. Messrs. Philip show a most ingenious portable globe, not unlike an umbrella when closed. It consists of a framework of steel wire, covered with cloth on which is printed a map of the world. It can be expanded or collapsed at will. The cloth cover is of durable material made expressly for the purpose, and to secure permanence the colouring is produced at the press with varnish colours. The globe is about 15in. in diameter, and for the convenience of suspending it by a cord the top of the axis is furnished with a ring. It weighs less than three-quarters of a pound, and, without a stand, only costs 12s. 6d. The stand is 5s. extra. It is admirably adapted for lecture purposes on account of its portability. Between the ribs the surface is flat, so its use with quite young children is restricted. For private teaching, where each pupil can have his own globe, Messrs. Philip provide a terrestrial globe, 4in. in diameter, printed in colours, on a metal stand, packed in a cardboard box, for 1s. 6d.

It may be useful to know that old globes can be refurbished. Packed away in many headmasters' rooms and libraries are excellent globes with their surfaces dimmed with dust and age and their geographical information quite out of date. An 18in. globe can be cleaned and a new map of the world pasted upon it for about £2 15s. 6d., and a 12in. globe for £1 6s. 6d. Messrs. W. and A. K. Johnston, and other publishers, undertake this work even in cases where the original globe was not purchased from them.

In order to teach the world in its relation to the universe, a number of remarkably skilful and ingenious pieces of mechanism have been constructed. They represent with singular accuracy the phenomena attending the world's flight in space, and when seen and examined by the pupils they clear up the hazy notions which oral teaching, even at its best, is apt to produce. The Orrery is a machine that represents, by the movements of its parts, the motions and phases of the planets in their orbits. These revolve round the sun at their proper relative rates, each planet having, moreover, an independent movement by which it may be set to any given position. The diurnal motion of the earth, the seasons, the phases of the moon, and the phenomena of eclipses are also produced by the same mechanism. With a spring clockwork movement, this machine costs £25, but if made to revolve by a hand-winch it is only £7 10s., either pattern being obtainable from Messrs. Philip. Orrery is derived from the title of the Earl of Cork and Orrery, a famous astronomer.

By omitting the planets from this elaborate mechanism, a simpler piece of apparatus, named the "Tellurian," has been devised. This illustrates the earth and its relation to the sun in its actual yearly journey round that body. By means of a simple mechanical arrangement, the earth is made to approach the sun at the time of its perihelion (least distance from the sun), and to withdraw from it at the time of its aphelion (greatest distance from the sun); the inclined orbit of the moon is accurately shown, together with the various combinations occasioning eclipses, tides, phases of the moon, and the varying lengths of days and nights. From the *Journal* of the Royal Geographical Society we learn that the apparatus by which the axis of the earth is kept constant at its proper angle with its orbit, and the change of the moon's declination is brought about, is a very ingenious application of mechanics. The French design costs £6 6s., or, with a 9in. globe, £25, but Messrs. Philip sell a simpler form, called the "English Tellurian," for £2 10s. For class-teaching another Tellurian has been designed which shows the earth rotating on its axis, the moon revolving in her path round the earth, the earth and the moon making their annual journey round the sun, and the moon periodically crossing and recrossing the plane of the earth's orbit, and so illustrating the eclipses and the months of the year. This only costs a guinea and a half, and is a piece of apparatus of considerable use to any school where mathematical geography forms part of the general curriculum.

Intelligent town boys frequently come to school in the early summer asking their masters what the highly-coloured posters mean when they invite tourists to "the land of the midnight sun." And the verbal explanation (though it is really very simple) is a difficult task for anyone who has not had much time to arrange his thoughts. Very often the boys retire in confusion, feeling that it is not worth while to pursue such a mazy course any further. If, however, the school possesses a patent mechanical globe designed by Mr. W. Rice, and sold by Messrs. Philip for 25s., the difficulty and confusion fade away at once. This not only shows the arctic circle during summer in full view of the sun, night and day, but also the alternation and varying lengths of day and night, the succession of the seasons, and the other phenomena arising from the two motions of the earth. Each pupil can use it and work it; it is almost self-explanatory, and it is one of the clearest pieces of apparatus we possess. After a boy has studied it by himself, we strongly recommend that the teacher insist upon a written explanation from the pupil. There is a great difference between what we think we know and what we really know, and putting our thoughts down on paper is a most salutary process. Perhaps here we may mention the whole secret of successful work with the globe in school. Like most trade secrets, it is very simple, and, indeed, everyone knows it, but they do not think about it. It is that the pupil should study the globe

by himself with the minimum of explanation by the teacher. If ever a little wholesome neglect is beneficial, it is when pupils are dealing personally and in actual touch with concrete things. Just as the boatman gives the skiff a gentle push off, so should the discreet teacher tell the boy just enough to start him on his travels round and about the globe. The rest may be safely left to the natural inquisitiveness of the human boy. Our geographical tours in schools are much too personally conducted, so much so that very few boys ever look at a map unless it is placed in front of their class and the teacher, armed with a pointer, stands ready for the tour.

Mr. Rice has also designed a "Selenotrope" to illustrate the various phases of the moon—a natural fact extremely difficult for pupils to grasp by verbal explanation only. It is a simple piece of apparatus, consisting of a square board upon a standard with seven phases of the moon, so arranged that by turning a globe in the centre of the board the phases from new through full to gibbous can be clearly seen. This costs 10s. 6d. from Messrs. Philip.

Another special piece of apparatus for illustrating the causes of the seasons has been arranged by Miss Cunnington, teacher of geography at the Darlington Training College. On a cardboard plane representing the ecliptic are four balls mounted on wires at right angles to each other, and at the intersection of the wires is a ball representing the sun. The four balls are painted to show how the circle of illumination falls at the equinoxes and solstices, and by carefully examining the position of each globe, when the apparatus is properly mounted, the reason for the four seasons is clearly seen. This device, accompanied by a handbook giving notes of lessons for the convenience of teachers, is sold for 21s. by Messrs. Philip.

The best combined celestial and terrestrial globe for schools has been patented by Miss Gregory for Messrs. Philip, under the name of the "Geodoscope." A 3in. globe, of white surface, with countries blocked in black, and broad bands of colour representing the equator and tropics, is surrounded by a 12in. globe of strong, clear glass mounted on a stand. On the outer globe, representing the celestial sphere, is traced in ground glass the line of the ecliptic passing through the twelve constellations of the zodiac. Through an opening in the glass there is a handle for rotating the earth, and so a real attempt is made to convey a general aspect of the earth and heavens and the stars and the sun from the point of view of a spectator on the earth. This costs £2 2s., or £1 1s. for a smaller size, viz., a 2in. earth in a 6in. globe.

The teacher who undertakes the use of the globe and other cognate forms of apparatus is strongly recommended to read chaps. x., xi., and xii. of "Physiography for Beginners," by A. T. Simmons (Macmillan), 2s. 6d. In these chapters are clear explanations of many of the problems *which the study* of the globe suggests, and the teacher will be prepared to answer many all, of the questions put to him by a tho pupil. Simple experiments are also which further illustrate the complex phe of the earth in its relation to the sun, a very considerably to the interest of the s the globe.

THE ASSOCIATION OF TEACHEI TECHNICAL INSTITUTES.

THE formation of this association re a distinct stage in the organisa English education. Generally sp education may be divided into three bra primary, secondary, and tertiary—the las subdivided into technical and university, a this distinction is largely arbitrary an leading. The organisation of educatio an administrative point of view is natur lowed by the organisation of those whc work is devoted—although in varying de to educational work in the class-room and tory.

Of the three branches of education, mentary school teachers have a strong and ful organisation in the National Union mentary Teachers; the secondary school a teachers are organised in the Incorporate ciation of Assistant Masters, and the Incor Association of Assistant Mistresses. All associations have been described in THE WORLD. For the teachers of an in section of the third branch of education have the "Association of Teachers in T Institutes," which includes among its n both technological and university teachers

Unsuccessful attempts have been mad past to form such an association, prir however, in the somewhat restricted f associations of teachers of "science an classes. In recent years, with the establ and development of a large number of t institutes or technical colleges, a new and branch of the teaching profession has aris its own special problems and educational a fessional interests. It is impossible to s curately the number of teachers engaged nical institute work, but probably, as a estimate, there are in England and Wal about four to five thousand, of whom perh are engaged on the permanent staff, the re being employed in professional or trade the daytime, and teaching only in the It has long been felt that some form of organisation for these teachers was hig sirable—if not an absolute necessity. the educational point of view first, the t education of the country is largely cc by the permanent officials of the Bc Education, the City and Guilds of Lon stitute, country and borough council ec committees, organising secretaries and c of education, and the principals of the

institutes. Of these, as a rule, only the principals have any practical experience in teaching, and obviously their energies must be almost entirely devoted to organising and directing. In the last resort the efficiency of technical education depends upon the teachers; hence the organisations of officials and others mainly concerned with the administration and direction of technical education must be supplemented by organisations of those engaged in actual work, day and evening, in the lecture-room, laboratory, or workshop. From the professional point of view, the need of some central organisation is urgent, both by the teacher on the one hand, and the director and administrator on the other. A professional organisation is necessary for teachers in technical institutes, which shall speak for those engaged in this branch of the teaching profession as the General Medical Council does for the medical profession, and the Bar Council and the Incorporated Law Society for barristers and solicitors.

Prior to 1904, the only association in existence was the West Riding of Yorkshire Association of Teachers of Science, Art, and Technology. The Association of Teachers in Technical Institutes was formed as follows. Informal meetings were held in May, 1904, of the staffs of certain of the London polytechnics and technical institutes. A general meeting was held at the Birkbeck College on October 22nd, 1904, when the association was definitely formed. The rules and constitution were adopted at a general meeting held on January 21st, 1905. The first annual general meeting was held on November 4th, 1905, when the annual report of the council was adopted, and officers and council elected for the ensuing year.

The general work of the association is indicated by the following list of principal matters which have been under the consideration of the council:—

(*a*) Registration of teachers.
(*b*) Syllabuses of work, examinations and inspection.
(*c*) The technical training of apprentices.
(*d*) The relationship of the association to other bodies of teachers.
(*e*) Agreements between teachers and governing bodies.
(*f*) The representation of teachers upon public examining bodies.
(*g*) The extension of the association to the provinces.

The proceedings of the association have been printed and circulated among members and prominent educationists. The Association of Teachers of Domestic Science, numbering about 600, is affiliated to the association.

The president of the association is Mr. W. J. Lineham, M.Inst.C.E., M.Inst.Mech.E., M.I.E.E., head of the engineering department, Goldsmiths' College, whose portrait we publish. The honorary secretary is Mr. J. Wilson, M.Sc., head of the chemical department, Battersea Polytechnic. The council comprises a number of the best-known technical institute teachers in London and the provinces, representing most of the groups of subjects commonly taught at these institutions. On the council are to be found principals, heads of departments, university teachers, assistant lecturers, and a strong body representing trade or evening teachers.

The objects of the founders of the association may be summarised thus:—(i) To bring together into one association all those engaged in the highly varied work carried on in technical institutions; (ii) for the promotion of educational efficiency and the professional interests of all teachers concerned. Membership of the association is open to all teachers—whether day or evening—in technical institutes, excepting those engaged solely in secondary day-school work, such teachers being regarded as belonging to the secondary branch of education. The main

MR. W. LINEHAM,
President of the Association of Teachers in Technical Institutes.

objects of the association are educational. The council of the association believes that while the teacher has a strong claim upon the community for reasonable conditions of work, salaries, tenure, and pensions by virtue of his or her services to the State, the community has a still stronger claim upon the teacher. The methods of teaching must be rendered more efficient, and there must be a higher level of educational attainments and equipment. Further, the evening teacher of the often unjustly criticised trade and technical classes represents a highly valuable type of experience. By the daily exercise of his trade or profession, he is brought into intimate contact with industrial work and the real requirements of the students. This specialised experience of educational needs should be at the service of the community, not only in the class-room, but collectively through

an organisation, so that the requirements of the trade and industrial students should be duly considered and appreciated.

As detailed in the rules, the objects of the association are :—

(*a*) The advancement of technical education generally.

(*b*) The interchange of ideas regarding the methods of technical teaching.

(*c*) The promotion and safeguarding of professional interests in such matters as tenure, salaries, pensions, registration, training, and qualification of teachers; schemes of examination and inspection.

(*d*) To lay the views of technical teachers before the various educational authorities and the public.

(*e*) To enable teachers in technical institutes to co-operate as a body with other educational or scientific associations where desirable.

(*f*) To render legal advice and assistance to members wherever possible and desirable.

(*g*) To institute an employment bureau.

(*h*) To create a benevolent fund for needy members as soon as the society shall be strong enough to do so.

It is unquestionable that at present there is a strong public reaction against technical education, partly due to the inevitable swing of the educational pendulum, and partly to mistakes which have been made in the past. There is also a danger that the present highly necessary development of secondary education may tend to lessen the attention given to technical education. The A.T.T.I., as teachers of technical subjects and the sciences underlying these, must play its part in strenuously keeping before the public the ever-increasing necessity for technical education in its widest and truest sense.

For the improvement of methods of teaching there must be provided means of communication and intercourse among members. This the association has already provided to a certain extent by meetings of sections of teachers. The papers read at these meetings and the discussions thereon are printed in the "Proceedings." The council is anxious to develop this branch of the work. Among the subjects it is hoped to take up in this way during the coming session is "The Teaching of Mathematics to Engineering and Trade Students." The council hopes that, later, annual conferences of technical institute teachers may he held at some central town to discuss general educational and professional matters. It may be mentioned that a "Building Section" has been formed from among the London members to hold monthly meetings for the discussion of matters of interest to building-trade teachers in London. A "University Section" is now in process of formation.

The professional questions which are being considered by the association at present are principally the agreements between teachers in technical institutes and their governing bodies, and the registration of teachers by the Board c cation. As regards the former question, able memorandum drawn up by the lega mittee has been circulated among me Meetings have been held to discuss the q of registration, and a series of resolution been passed by the association, to be l before the Teachers' Registration Coun these resolutions it is urged: (*a*) that a of registration for teachers in technical in is desirable; (*b*) that a separate column (col be formed in the register for such te without prejudice to registration in any column.

With respect to examinations, the asso —like all bodies of teachers—strongly dep the undue prominence of examination as c to inspection. Examinations being app practically a compulsory feature of our educ system, the association is carefully consider various schemes of examinations and syl connected with technical institute work. joint meetings have been held of buildin and engineering teachers to consider t ordination which should exist between the ing of building construction and mechani representations will be made to the Board c cation thereon. Further, members were last June to send to the council criticis examination papers set at the May ex tions held by the Board of Education and t and Guilds, &c., with a view of bringing c legitimate complaint by teachers and stud the notice of the examining authority con Similar action will be taken with reference amination results.

In co-operation with other bodies of te elementary and secondary, technical i teachers must press for :—

(i) A sound system of elementary and sec education accessible to all, as only upon preliminary training can technical educa developed.

(ii) The dethroning of the examination ic

(iii) The direct representation of teache educational and examining authorities.

Among other points of importance is th tion of research. The American and Con technical institutes are regarded as inst not only for the diffusion of knowledge, the discovery of new knowledge. This m hold good for English technical institution for this to be possible there must be consi alterations in the conditions of work, so t staff, when qualified, shall be enabled to research provided always that the teachi of the work of the department does not There should also be further provision of r scholarships for duly qualified day or technical institute students.

In conclusion, the council of the ass recognises clearly the difficulties ahead teacher's work is hard and all-absorbing it is difficult to spare the time necessary f ciation work. This branch of the teachi

is widely different in *personnel*, comprishly qualified graduates from the older and universities, the architect, surveyor, the teacher, the teacher of cookery, laundry and the teachers of languages and com- subjects, all however coming under the heading of teachers in technical in-. In spite of these and other diffi- the association has already achieved a measure of success in the few months of tence. It is hoped that during the com- sion provincial branches of the association definitely established. The work of the tion is of national importance, and upon pport of the members of this branch of the g profession depends the extent to which jects and aims outlined in this article are d.

NDICTMENT OF PUBLIC SCHOOL EDUCATION.[1]

E writer of these articles, which are reprinted, with some additions, from the *Westminster Gazette*, has, perhaps, been thus to publish them as a book. Their ess and vivacity admirably suit an evening but in a volume their want of weight and ce is only too apparent. The intellectual in our great public schools is, beyond n, defective and justly open to very severe m. But for such criticism to be of any real the writer of it should have a firm grasp , a real knowledge of actual evils, and a nsight into possible remedies, while he be very chary in his use of mere rhetoric ective. In these qualities, however, of a itic "Kappa" is singularly deficient, as account of the twelve essays or chapters constitute his work may, perhaps, suffindicate.

irst of these essays is entitled "An Unuate," and gives the story of an unouth who, having been "captain of his " and gained a classical scholarship, is, he has ceased to be a freshman, already oly and mopish, from which fact the deduction is made that public school edus altogether defective. Accordingly, the passes, by an easy transition, from this ut a silly boy to consider what is "The nd of Man." All previous discussions on st theme he absolutely ignores. He has at the Scottish Catechism says that man's d is "to glorify God and to enjoy Him "; and so, jauntily putting aside the first the definition, he asserts that the last five except in so far as they "narrow the e with sex," do in fact "express with accuracy the chief end of man." Having hold of these five perfect words, he proto interpret them in a manner which is ely opposed to their original meaning. He takes from them all their religious sense of communication with a personal God, and defines "enjoyment" as consisting in "the intellectual apprehension of the sublimities and mysteries of the universe and of the human lot." Having thus settled in a phrase the purpose of life, he proceeds to point out that there are stars which we should do well to look at, and also that there are molecules the size of which has been approximately measured, while, although he cannot grasp how certain scientific "conceptions" about their size can be "physically verified," still we have his word that such conceptions are "metaphysically inevitable." Then, too, we can learn "to enjoy the works of the Supreme Imperator"—the metaphor requires this "narrowing with sex"—"whose conscripts we are"; for, "if we cannot follow his strategy, his whole plan of campaign," yet "we can partially discern and admire his marvellous tactics." Incidentally, however, it is mentioned that the "mass of mankind" are incapable of understanding these divine tactics and thus attaining their being's end, so that this new "religion of the intellect" is in fact a revelation only intended for young gentlemen.

It is only for the select few that this modern prophet pens the articles on "Aladdin's Palace," "The Adventures of Sindbad," and "The Romance of Religion" which now follow. The first of these is an account of the world as revealed by science, or, rather, of "Kappa's" meditations as he looks out of "his study window this bright May morning," and ponders how "his educators in the Day of Wrath" will justify their failure to teach him botany and geology. The second is a dissertation on the advantage of reading history, which, after masquerading as "The Adventures of Sindbad," now reappears as "The Saga of Humanity" (sometimes with capitals and sometimes without), to which, in the next chapter, Religion is shown to lend an element of Romance. What the writer says about history and science is, for the most part, both true and trite, but his remarks about religion will surprise ordinary minds. What he means, indeed, it is hard to say, for a writer who states that St. Peter's at Rome, as "the stupendous symbol of a world-hallucination, the monster soap-bubble of an illusory metaphysic," thereby acquires for unbelievers "a significance more human and more pathetic," is certainly a writer of whose meaning no modest critic can be sure; yet he apparently wishes to show that the study of religions might be made romantic to schoolboys; and undoubtedly it might. There is no need to declaim about "admirable martyrs" and "adorable saints," for the story of the simplest soul that ever groped feebly towards the light has in it sufficient material for the best romance. Religion has assuredly its own solemn and splendid tragedies, and yet, whatever fluent essayists may say, the teacher who preferred to prate about its romance rather than to dwell upon its realities would commit the most unpardonable of crimes. Religious belief is too serious a thing

[1] Youth but Know." A Plea for Reason in Education. By pp. (Methuen.) 3s. 6d. net.

C

to be made a theme of declamation before boys, and the awful words once spoken against those who "offend one of these little ones" remain still true and valid.

But what does "Kappa" really mean? The first five of his ten principal chapters leave us possessed of the single fact that, in his judgment, science and history are the two branches of a liberal education. About the former, however, he says little, while mathematical teaching is dismissed with one incidental remark that much of it is "profoundly stupid"; for his real interest is with history. On this subject he is eloquent, but unhappily has yet "to hear of a single school in which the Saga of Humanity is largely and luminously revealed to the average boy." For, at least to the young, this Saga must be "revealed," not "taught." All "abhorrent manuals and synopses and summaries" being flung aside, "the process should resemble the withdrawal of a curtain and disclosure of a splendid and moving spectacle. Every lesson should end, like an instalment of a serial romance, with a tantalising 'to be continued in our next,' and the teacher (*sic*) should be held to have mistaken his vocation who should fail to hold his pupils fascinated." It is in vain that some one who is described as "a most inspiring and illuminating teacher" has pointed out to him that experience shows history to be a subject at once most difficult to handle and most doubtful in its results. "Kappa" merely smiles and says that, since "as yet there is no science of history-teaching in English schools," this is quite natural. "Remember," he adds, with delightful modesty, "that 'history,' as I employ the term, does not mean the particular group of 'knowledges' cultivated, according to their respective methods, by Gibbon or Buckle, Michelet or Mommsen."

Poor historians! They are annihilated in a sentence, and then comes the turn of classical schoolmasters. "About thirteen," it seems, a lad reaches "the parting of the ways," and should decide whether he will devote his time chiefly to science or to history, and if he chooses the latter, then "Enter the Classics"—such is the heading of chap. vii.—for literature is "the breath and life" of history. Unhappily, however, the poor boy, who is longing for the Saga, finds himself now set down by stupid schoolmasters to worship "The Fetish of Grammar" and to waste his time on "Verbal Chess-playing," so that for two chapters we have to read once more the well-known diatribes against Greek syntax and Latin verse. There is nothing new in what is said, and with much that is said about pedantic teaching of mere forms and tricks of speech all sensible persons must agree. If classical teaching is not real and living, if it does not help to produce accuracy of thought and utterance along with some taste for good literature and some sympathetic insight into the great story of human life, then it can no longer be defended. But when a writer sneers at all grammar as though it were only a study of accidental conventions, or at all composition as though it were merely a silly shifting of words, he certainly overshoots the It is open to him to argue that too much given to these subjects, that they are badly or that they are better studied in some language, but to flout them as wholly portant is obviously unjust. Nor is it to agree with "Kappa's" views as to the method of reading classics. His statemei indeed, somewhat oracular, but he apr holds that, as "the planet both in its physi psychological aspects" has become "a fa and more complex phenomenon than it our forefathers," we must greatly redu time given to Latin and Greek, while he us that "a living knowledge of their lit could be attained in about a fifth of the which we now devote to obtaining "a narrower" acquaintance with it. How th vellous result is to be secured he makes attempt to show. He contents himself wi gesting that boys should freely use trans that they should never read Plato, becau will come away from doing so "in a iconoclastic temper," and that, as "awa the imagination" is the main point, they sometimes study Greek inscriptions " graphically reproduced," since nothing " the past more vitally before us than the records as they were incised by the men to the fact was present." It is at least inte to learn that imagination, as "Kappa" stands it, is ruined by Plato and arou photographs.

The final chapters on "Athletics" " Ethics" are of a like character. A grea might have penned an essay on the wor athletics in our chief schools which wou seared and burnt like a branding-iron; schoolmasters so wanting in all sense proper purpose of their calling, so wholly any true love of sound learning, as to h sented such an attack, however outspoke here we have chiefly trivialities. We have tions[1] from some silly novel, in which talk nonsense, brought forward as eviden grown men are maniacs about cricket. have football described as "a valuable k against atavistic promptings," but still quate to check that bullying which "K because he has read some stupid story in work of fiction, asserts—though his asse wholly unfounded—to be still prevalent schools. On "Ethics," indeed, he writ nobility and force, and his remarks c "triviality which is at present a veritable of the schoolboy mind" deserve careful att but his main contention, that the intellectua ing which he advocates will provide a sur of morals, seems doubtful, and is in fact restatement of the very disputable Socratic that "vice is ignorance."

[1] At an Eton and Harrow match, there are twelve minutes t ten runs to be made: "Warde (the author's model house-master can't stand it,' he says—and his voice shakes oddly. 'You fello me behind the Pavvy a'ter the match.' 'I'd go with you,' say Septimus in a choked tone, 'but if I tried to walk I should tumb (P. 176.)

it has been necessary thus to show that
er of this volume has little claim to be a
educational reform, it in no way follows
demand for reform is not wholly just.
although the means which he would em-
m to be mistaken, the claim which he
ward for some improvement in public
ducation seems equally to be unanswer-
d the warm welcome which his articles
eived indicates a sense of dissatisfaction
hough perhaps vague and undiscriminat-
without doubt, widespread and, in fact,
nded. For it would not be intemperate
hat, as regards intellectual training, our
hools are barely doing half the work
ey might do, and which, unless boys
in them are to be outpaced by boys
ained in smaller schools, it is imperative
should do. With the increase of know-
ere must come some readjustment of
and classical teaching, for example, must
oved and accommodated to new con-
unless, to our infinite loss, it is to cease
as it has now partially ceased, to be an
t element in liberal education.
e fortunes of a particular branch of study
the true and larger issue. That is con-
ith the simplification and adjustment of
e curriculum in our schools. At present
aos. The humours of individual head-
the complexities of countless examina-
e clamours of specialists or theorists, and
ing desires of parents have turned what
e an ordered plan into a botched and
patchwork. Of system there seems to
st none, and, unless those who now
uthority unite in establishing some sound
le scheme of study, the only remedy must
t in that central control which they not
ably dread. And yet, important as it is,
tion of what should be taught is an in-
maller matter than the question of who
ch it. It is the quality of the teacher
kes the whole worth or worthlessness of
em of education whatsoever. "Make
good" and "his fruit will be good," but
fruit cannot be got otherwise, in spite
essayists who have written essays since
ion of the world.
pily, however, from the most prominent
ter down to the poorest assistant the intel-
pacity of pedagogues is continually, and
idly, deteriorating. The fact is certain;
e chief cause of it far to seek. No one who
ned with public schools really cares much
ectual capacity. Enthusiasm for learning
orest gift which a modern schoolmaster
ess. It is a thing little honoured, still less
, and all but openly despised. The
c profession scorns men who are merely
If a youth of parts and promise, en-
ith some infelicitous zeal for the spread
ledge, were to consult a man of the
out the wisdom of becoming a school-
the reply would certainly be: "Don't."
If he pressed his wish, the next answer would be: "Then take Orders." If he were unwilling to do this, but still persistent, the final oracle would give this advice: "Play games while you are young, and, as soon as you get a House, study nothing but 'Advice to Mothers' and your own banker's book."

Such a statement is coarse and even brutal, but it is, unhappily, true. Some day, perhaps, those who now chatter and scribble and theorise about education will recognise its truth, and then there will be some chance of improving our public schools, but certainly not before. Wealthy parents now consider that the chief merit of a schoolmaster is that he be a sort of virtuous hotel-keeper; and what such parents demand, pedagogues find it profitable to supply. They ought to be "ministers of the word," and they have been driven "to serve tables." It is a mean and humiliating fact, but until some remedy is found for it, until care of the mind is counted as important as care of the body, until schoolmasters take their proper place as teachers and not caterers, every attempt to quicken the present dulness of intellectual life in great schools will be absolutely futile.

THOMAS ETHELBERT PAGE.

A HISTORY OF EDUCATION.[1]

THIS is a more serious and exhaustive treatment of the history of education than any which has yet appeared in English, and it is distinguished from most other "text-books" which have tried or affected to cover the ground in not being a mere sketch and in not being merely partial. Of the latter sort there have been many books possessing solid merit—the last, Prof. Adamson's "Contributions," as the author modestly calls it, was too late for Dr. Monroe to use—but none of them has covered the whole ground, because none has approached the subject as a sociological question of the first importance, an interpretation of the history of human societies, as an account, in fact, of the conscious efforts of human societies to improve themselves.

Or the case might be put thus: that Dr. Monroe's book is a history of civilisation and of the way in which different and successive societies saw their own weaknesses and endeavoured to arm posterity against them. The process is one of perpetual adjustment. Just as we can all devise schemes which would have educated us better than our fathers' plans succeeded in doing, so our children in their turn, face to face with developments that we cannot foresee, will devise schemes to protect our grandsons against their parents' misfortunes. For the ideal education, that which exactly fits a man to deal successfully with the circumstances which will environ him, stands to the conventional or systematised education of any age just as morality stands to law: the convention is always behindhand; the ideal is

[1] "A Text-book of the History of Education." By Paul Monroe, Ph.D. 759 pp. (Macmillan.) 8s. 6d.

always ahead; the horizon is always receding. Our reach, thank Heaven, always exceeds our grasp.

"All the varieties of experimentation, all of the frequent changes in subject-matter, in method, in organisation, while they bring their evils and appear as curious phenomena to conservative educators of more stable societies, have yet this significance: they are recognitions that new principles have been formulated, new truths recognised, and that practice controlled by tradition or by principles derived from a partial view alone must be readjusted in closer accord with the new truths derived from the ever expanding knowledge of life and of nature."

It would be impossible in a review of this valuable book to do justice to its several parts. The author's plan is to emphasise "great movements" as they manifest themselves in the thought of each period treated and in its practice, and he has therefore "selected only such men and such facts as have to do with typical movements, and which consequently influence present thought and life." Every page is a text on which many pages of review or commentary might be written; but it is essentially a "post-graduate" book. Without a good deal of general reading, and particularly of history, the ordinary English education student, who is often struggling to complete an academic course whilst in training for his profession, will get little good of it.

One thing the book seems to teach very clearly, though the author could hardly have had the purpose in mind; for practical purposes, for our strengthening and our warning, the study of Greek and Roman education and of Renaissance and post-Renaissance education is incomparably more profitable than the study of anything between. How much, together, the Greeks and the Romans did for us, in this as in all that can be compassed by purely intellectual machinery! Until new physical conceptions arrived to add to the variety and content of human experience, the successors of Plato, Aristotle, and Quintilian merely played "cat's cradle" with earlier men's ideas.

Beyond question, the author is right in taking some conspicuous example of a great process, seen at work here and there and everywhere on a small scale, and in giving an account of aims, content, and method. He deals thus with primitive education, displaying it as an adjustment that ends in itself, unideal, non-progressive. He shows China a shining type of education as mere recapitulation, a deliberately organised conservatism, and, truly enough, regards it as a fair general example of Orientalism in education. (We are still Oriental, here at home, in many aspects.) The Greeks are the first conspicuous people who set themselves to give a "liberal" education, an education as "progressive adjustment." The Romans are the type of a training deliberately "practical." The Middle Ages, unprogressive (as to the world), worked out the idea of discipline (for heaven), and the Renaissance brought to birth again the liberal education. Then comes an era in which the liberal education *and the preoccupations* of warring theologians both influenced the schools, until "realis going the spirit of physical scrutiny and ment for which we are to-day trying to proper place.

Amongst a thousand other things whi reader will note as suiting something in mind and experience, some will be glad the reminder that *ludus* and σχολὴ r the school proper as a relief *from*, the home. Little indeed can the school d home fails in its duty and surrounds tl with a baneful atmosphere.

And the whole of this history warns perhaps, explicitly, but clearly enough—tc the number of the "subjects" of our curr from poetry and music alone were p almost all the great results of Greek ed and it was all, as Dr. Monroe points doing." And, again, we have something (though the author does not draw the mor the fact that the great games and gymnas cises and ceremonies and dramatic exl which formed so large a part of Greek no *practical* value either to the State citizen. Yet they were types of the thir worth doing because they were done fo selves, for no ulterior motive. This is su great test of value.

Dr. Monroe does not always give us tl ences in his quotations, as we should like them, but he has already published a Book" for the Greek and Roman peri promises a continuation. It would be have there copious references to this volume, and in the next edition of this cross-references.

Occasionally the author strays into j says things which might be said less tec or grandiloquently: *e.g.*, "this period of was as well one of transition and of origins "the financial nexus" is a roundabout saying "pay." "Dilettant" is not us monly as an adjective, is indeed unknov on this side of the water, and hardly s have much to recommend it. Huxley w member of the London "City" School but of the London School Board, *tout co* Francis Bacon was never Lord Bacon, th was Lord Chancellor.

But these are very trifling matters. Dr. has given us an admirable book, full of r well-digested learning; not free, especiall last chapters, of very controversial mat singularly fair and liberal on the whc serious student of education can afford without it.

History of India. By C. F. de la Fosse. (Macmillan.) 2*s.* 6*d.*—This useful little book published three years ago, and it has been reprir half a dozen times since. Its special feature is the first in books of this size to devote half its the pre-British period. It has several illustratio map, and we can recommend it to those who ca larger books for the purpose of realising the I India as a whole and our historical position there

THE MOST NOTABLE SCHOOL-BOOKS OF 1905.

It is difficult for many teachers to become familiar with even the most important of the school books published during the course of a year. To assist schoolmasters and schoolmistresses to make a selection of books in the chief subjects of the school curriculum published during 1905, we have secured the assistance of experienced and competent authorities on these subjects who are each in touch with the needs of schools of all grades. Teachers who examine the books of the year enumerated below will at least have the satisfaction of knowing they have acquainted themselves with the scope and contents of the best of the school books published during 1905. In compiling their lists the experts whose aid has been obtained have not confined their attention to books reviewed in these columns. In cases where the title of a book is not a sufficient guide as to its contents, a few explanatory notes have been added.

Modern Languages.

"Der Sprachunterricht muss umkehren." By W. Viëtor. (Leipzig: Reisland.) 1s.

The new edition derives special value from the notes which Prof. Viëtor has added.

"The Teaching of Modern Languages." By L. Bahlsen. (Ginn.) 2s. 6d.

A convenient account of recent developments in modern language teaching.

"Histoire de la littérature française classique." La Pléiade. By F. Brunetière. (Paris: Delagrave.) 2s. 1d.

An excellent example of the great French critic's work.

"Histoire de la langue française des origines à 1900." Vol. I. De l'époque latine à la renaissance. By F. Brunot. (Paris: Colin.) 12s. 6d. net.

Very full; should be added to the teachers' library.

"Lectures françaises, Géographie et Histoire." By W. M. Poole and M. Becker. (Murray.) 2s. 6d.

A well-planned selection, with good questions on the text.

"Phraséologie française." By C. M. Robert. (Groningen: Wolters.) 6s. 6d.

Admirable elucidation of proverbs, idiomatic phrases, &c.

"Meisterstücke deutscher Prosa." By O. Weise. (Leipzig: Teubner.) 1s. 8d.

A very good selection, with interesting comments on style.

"Lehrbuch der Phonetik." By O. Jespersen. (Leipzig: Teubner.) 5s.

A fine handbook for students who have already some knowledge of phonetics.

"Elementarbuch des gesprochenen Französisch." By F. Beyer and P. Passy. (Cöthen: Schulze.) 3s.

The completely revised second edition of this book, which attracted so much attention on its appearance twelve years ago.

Classics.

Amongst the helps to the understanding of classical literature we may name the following:—

The first place naturally falls to Prof. Butcher's "Harvard Lectures on Greek Subjects" (Macmillan, 7s. net); a book full of discriminating enthusiasm, and one which anyone with literary tastes must enjoy.

Prof. Stewart's "Myths of Plato" translated and explained (Macmillan, 14s. net) is original in scope and treatment, and deserves study.

Mr. Dill's "Roman Society from Nero to Marcus Aurelius" (Macmillan, 15s. net) is a worthy companion to his earlier volume, although the subject is not so fresh.

Mr. Whibley's "Companion to Greek Studies" (Pitt Press, 18s. net) is an encyclopædia in little; very useful for reference.

Father Browne's "Handbook to Homeric Study" (Longmans, 6s. net) is very useful for the non-specialist student of a stage not very advanced.

Scholars' editions of importance there have been several. The chief are:—

"The Speeches of Isaeus." By W. Wyse. (Pitt Press.) 18s. net.

This book has long been wanted, and will become the standard Isaeus. It is especially useful for its notes on Attic Law, but it is in every respect good.

"Bacchylides," with introduction, notes, and translation by Sir R. C. Jebb (Pitt Press.) 15s.

"The Peace of Aristophanes." By H. Sharpley. (Blackwood.)

The year's school-books have been for the most part commonplace, many worse; books overloaded with notes, and compiled unintelligently, still come out in great numbers. We may, however, mention:—

"Greek Reader." Vol. I. Selected and adapted, with notes, from Wilamowitz-Möllendorff's "Griechisches Lesebuch." (Clarendon Press.) 2s.

Although this is too difficult for a *first* Greek reader, and also contains some late Greek constructions which might easily have been removed, it is of very great interest, and the pieces are quite fresh.

"Thucydides, Book VI." By A. W. Spratt. (Pitt Press.) 6s.

For advanced students, but it contains elementary notes.

"The Euthydemus of Plato." By E. H. Gifford. (Clarendon Press.) 3s. 6d.

An excellent edition.

"Livy XXVI." By R. M. Henry. (Arnold.) 2s. 6d.

Contains fresh matter in the notes.

We ought also to mention the final instalment of Dr. Postgate's admirable "Corpus Poetarum Latinorum" (Bell), and the texts of "Plautus," Vol. II., by Mr. Lindsay (Clarendon Press), and of "Juvenal," by Mr. Housman (Grant Richards).

English Language, Grammar, and Composition.

The year has not been marked by the publication of any *new* work of striking importance in English. There are signs of much activity in the production of quite elementary works in grammar and composition. We hope this does not mean that formal grammar is begun too early. We are glad to see the enlarged edition of the book that heads our list—

"The Elements of English Grammar." By Alfred S. West. (Cambridge University Press.) 2s. 6d.

The present writer has used this Grammar for several years, and found it very satisfactory and trustworthy for class-work. The addition of a chapter on essay writing increases its value.

"Practical English Grammar, with Exercises in Composition." By Mary F. Hyde. (Heath.) 2s. 6d. net.

Carefully done, and well named practical.

The next four are elementary books:—

"First Steps in English Parsing." By F. Ritchie. (Longmans.) 6d.

Simple, practical, sound.

"Elementary Lessons in English." By A. T. Bott. (Longmans.) 1s. 6d.

Sensible, and likely to prove useful.

"The Mother Tongue." Book I. By S. L. Arnold and E. L. Kittredge. Edited by Prof. Adamson. (Ginn.) 1s. 6d.

Admirably adapted for beginners. Oral composition strongly insisted on.

"The Beginner's Guide to Essay Writing." By T. W. Berry. (John Heywood.) 6d.

Useful outlines.

"Punctuation: its Principles and Practice." By T. F. Husband and M. F. A. Husband. (Routledge.) 2s. 6d.

Teachers should find valuable help here on an important, but often neglected, subject.

"The Paraphrase of Poetry." By Edmund Candler. (Bell.) 1s. 6d.

Well suited to show how to get from paraphrasing its peculiar good.

"A Text-book of Précis Writing." By T. C. Jackson and J. Briggs. (Clive.) 2s. 6d.

Thoroughly practical, and on right lines educationally.

"Stormonth's English Dictionary." New edition. Edited by William Bayne. (Blackwood.) 5s.

Comprehensive and accurate. There is also a smaller edition—the Handy School Edition, 1s.

For the School Library.

"English, Past and Present." By Archbishop Trench. Edited by A. Smythe Palmer. (Routledge.) 2s. 6d.

History.

For the Use of Teachers.

"Colonies and Colonial Federation." By E. J. Payne. (Macmillan.) 3s. 6d.

An enthusiastic account, historical and geographical, of the British Empire.

"The Holy Roman Empire." By J. Bryce. (Macmillan.) 7s. 6d.

A largely revised edition of Prof. Bryce's famous work.

"A History of Modern England." By H. Paul. (Macmillan.) Vols. III. and IV. 8s. 6d. net each.

A brightly written history of England in the nineteenth century.

"The Political History of England." (Longmans.) Vol. II., by G. B. Adams; Vol. III., by T. F. Tout; Vol. X., by W. Hunt. 7s. 6d. net each.

A standard history, to be completed in twelve volumes, by specialists. Specially important by being up to date.

For Class Use.

"The Story of the British Empire for Children." By F. M. Anderson. (Methuen.) 2s.

A charming book for pupils to read for themselves.

"Mediæval British History." By J. S. Lindsey. (Heffer.) 6s. net.

A complete guide to study, whether alone or in class.

"A Biographical History Reader." By B. A. Lees. (Black.) 2s. 6d.

Selected lives, giving incidentally much history.

"Stories from the Northern Sagas." By A. F. Major and E. E. Speight. (Horace Marshall.) 2s. 6d.

"A Brief Survey of British History." By C. E. Snowden. (Methuen.) 4s. 6d.

A series of useful summaries.

"Mediæval History." By M. A. Howard. (Horace Marshall.) 2s. 6d.

A clearly told story of Europe in the Middle Ages.

For the School Library.

"A Student's History of Scotland." By D. W. Ranm (Methuen.) 2s. 6d.

Sanely written and well proportioned.

"Illustrative History: British and Old English Period By E. J. Bailey. "Illustrative History: Tudor Period By N. L. Frazer. (Horace Marshall.) 2s. each.

Extracts from various writers.

"An Introductory History of England from the Earlie Times to the Close of the Middle Ages." By C. R. L Fletcher. (Murray.) 5s.

The work of an enthusiast in making history "live."

"Short Lives of Great Men." By W. F. Burnside an A. S. Owen. (Edward Arnold.) 3s. 6d.

Forty-four biographies, well told.

"Captain John Smith." By A. G. Bradley. (Macmillan. 2s. 6d.

A life of the Virginian hero.

"The Story of the Town of Reading." By W. M Childs. (Long.)

An instructive reading-book about a typical town and its connections with English history.

Geography.

For Pupils' Use.

"An Introduction to Practical Geography." By A. T Simmons and H. Richardson. (Macmillan.) 3s. 6d.

Chief feature, a collection of admirable exercises.

"Laboratory and Field Exercises in Physical Geography." By Gilbert H. Trafton. (Ginn.) 2s.

Exercises mostly American, but good and suggestive.

"Object Lessons for Juniors." By F. H. Shoosmith (Charles and Dible.) 2s. 6d.

Numerous exercises.

"School Geography." By Charles Bird. (Whittaker.

Plenty of "facts" for examinations.

"The Junior Geography." By Dr. A. J. Herbertsor (Clarendon Press.) 2s.

Contains much excellent matter and many suggestiv maps.

"Globe Geography Readers. Intermediate." By Vince T. Murché. (Macmillan.) 1s. 9d.

"Europe and the Mediterranean Regions." By J. E Reynolds. (A. and C. Black.) 2s.

"The British Empire." (Nelson.) 1s. 10d.

One of the "World and its People" Readers.

"Round the Empire." By Dr. G. R. Parkin. Prefac by Lord Rosebery. New edition. (Cassell.) 1s. 6d.

"Handbook of Commercial Geography." By G. C Chisholm. Fifth edition. (Longmans.) 15s.

This is, without a doubt, the standard work on economi geography.

Books for the School Library.

"The St. Lawrence Basin." By Dr. S. E. Dawso (Lawrence and Bullen.) 7s. 6d.

"The Siege of the South Pole." By Dr. H. R. Mi (Alston Rivers.) 7s. 6d.

Two of Dr. Scott-Keltie's "Story of Exploration" serie and both most interesting and instructive volumes.

"Canadian Life in Town and Country." By Morg and Burhee. (George Newnes.) 3s. 6d.

"The Far East." By Archibald Little. (Clarend Press.) 7s. 6d.

One of Mr. Mackinder's "Regions of the World" seri

Atlases.

"Historical and Modern Atlas of the British Empire." By C. G. Roberts and J. G. Bartholomew. (Methuen.) 4s. 6d.

"The Oxford Atlas of British Colonies: Part I., British Africa." (W. Stanford.) 2s. 6d.

"Murray Small Classical Atlas." By G. B. Grundy. (Murray.) 6s.

"Atlas of Commercial Geography." By R. Ferguson Savage. (W. and A. K. Johnston.) 5s.

Well got up, but to be used with care and caution, and not without constant verification.

"The World's Chief Industries." (Philip.) 2s.

Twelve maps from "Commercial Intelligence"; very graphic; showing production and distribution of certain well-known commodities.

Wall Maps.

"Philip's Comparative Series of Large Schoolroom Maps: S. America, Asia, World, British Isles." (Philip.) 16s.-18s.

"Stanford's New Orographical Series: Africa, Lancashire and Cheshire." (Stanford.) 16s. and 15s.

Both sets most excellent as physical bases for class-teaching.

Mathematics.

"Easy Mathematics. Chiefly Arithmetic. Being a Collection of Hints to Teachers, Parents, Self-taught Students and Adults; and containing a Summary or Indication of most things in Elementary Mathematics useful to be known." By Sir Oliver Lodge. xv.+436 pp. (Macmillan.) 4s. 6d.

The earlier chapters contain an admirable exposition of the nature and philosophy of the operations in arithmetic. Part II. contains the applications of the subject to various easy and useful branches of physics. The book is extremely useful to the teacher, and not less so to the advanced pupil who is in a position to inquire into the philosophy of the subject.

"Elementary Algebra," with Answers. By W. G. Borchardt. vii.+491+lxiii. pp. (Rivingtons.) 4s. 6d.

Proceeds from the very beginning by the easiest stages, illustrating the fundamental operations by graphic constructions on squared paper; takes simple equations very early—much before H.C.F., &c. It is scarcely possible that a more simple work could be found for the beginner; interest is well maintained by very copious graphic illustration throughout.

"Advanced Algebra." By Herbert E. Hawkes. xiii.+285 pp. (Ginn.) 6s. 6d.

In spite of the title, the work is suitable to the higher classes in schools. In addition to the usual school course, it contains a short discussion of determinants and the prominent principles of the theory of equations, with much graphic illustration.

"Examples in Algebra." By Charles M. Clay. vii.+371 pp. (Macmillan.) 4s.

A very extensive collection, about 8,000, proceeding from the most simple operations, and illustrating all branches of the subject usually contained in text-books.

"Geometrical Conics." By G. W. Caunt and C. M. Jessop. 80 pp. (Edward Arnold.) 2s. 6d.

A very small and handy book confining itself to the proofs of the fundamental properties. Founds the subject on sections of a cone, instead of the usual focus and directrix definitions. A very simple and useful companion to analytical work.

"The Elements of Analytic Geometry." By Percey F. Smith and Arthur Sullivan Gale. xii.+424 pp. (Ginn.) 8s. 6d.

Like many American works, very helpful to students who have to work by themselves; appeals to the higher classes in schools; contains a thorough discussion of properties of conics, methods of inversion, reciprocation, curve tracing; a great wealth of excellent figures.

"Elementary Trigonometry." By H. S. Hall and S. R. Knight. xv.+415 pp. (Macmillan.) 4s. 6d.

A new edition enlarged, containing much logarithmic work and tables of four-figure logarithms, natural and logarithmic sines, &c. A selected course for first reading is given.

"An Introduction to the Calculus, based on Graphical Methods." By George A. Gibson. vii.+225 pp. (Macmillan.) 3s. 6d.

This may be regarded as the school introduction to the author's larger volume, which has attained a high place among works on the calculus. An intelligent pupil can work through most of the smaller book with but little assistance from the teacher.

"Integral Calculus for Beginners." By Alfred Lodge. vi.+203 pp. (Bell.) 4s. 6d.

Contains in a comparatively small space the usual course in the subject, together with a chapter on approximate methods (Simpson's rule, &c.), a short chapter on moments of inertia, and two chapters on the elementary parts of differential equations.

"Elements of the Differential and Integral Calculus." By William Anthony Granville. xiv.+463 pp. (Ginn.) 10s. 6d.

There is no better book for teachers and for students who have to work without much help. Quite suitable for schools in which the subject is taught; contains a very large number of excellent figures.

"A Note-book of Experimental Mathematics." By C. Godfrey and G. M. Bell. 64 pp. (Edward Arnold.) 2s.

A series of quantitative experiments in various departments of elementary mathematics and physics, all quite suitable to schoolboys. The book should be very useful to teachers, and especially to candidates for the Army qualifying examination. (The authors should not speak of "Kaytor's" pendulum.)

"Mechanics for Engineers, a Text-book of Intermediate Standard." By Arthur Morley. xi.+282 pp. (Longmans.) 4s.

Well suited to schools, and to beginners generally, although its title implies technicality which the book does not possess. The important principles of energy and momentum are prominent and well illustrated. Contains both statics and kinetics, with many examples.

"Mechanics: a School Course." By W. D. Eggar. vi.+288 pp. (Edward Arnold.) 3s. 6d.

A very fresh and interesting book, in which a course of experiment is taken concurrently with mathematical theory. The fundamental experiments of Galileo are quoted and explained, and these cannot fail to arouse the interest of the student.

"An Intermediate Course of Mechanics." By A. W. Porter. viii.+422 pp. (Murray.) 5s.

Useful mainly to teachers, and quite suitable to school work. Teaches sound and modern notions, and contains a considerable number of examples, as also a chapter on the equilibrium of fluids.

Physics and Chemistry.

Physics.

"Elementary Experimental Science." By W. M. Heller and E. G. Ingold. (Blackie.) 2s. 6d.

"A Further Course of Practical Science." By G. H. Leonard and W. H. Salmon. (Murray.) 2s.

This is a continuation of Mr. Leonard's "First Course of Practical Science."

"Second Stage, Magnetism and Electricity." By R. W. Stewart. (Clive.) 3s. 6d.

"Notes and Questions in Physics." By J. S. Shearer. (Macmillan.) 7s. 6d. net.

"Magnetism and Electricity for Students." By H. E. Hadley. (Macmillan.) 6s.

"Elementary Physics (Practical and Theoretical). Third Year's Course." By J. N. Brown. (Blackie.) 2s.

"An Introductory Course in Practical Physics." By J. Moffat. (Oliver and Boyd.)

Chemistry.

"Conversations on Chemistry." Part I., General Chemistry." By W. Ostwald. Authorised translation by Elizabeth C. Ramsay. (Chapman and Hall.) 6s. 6d. net.

A perfect appreciation of the pitfalls which beset the pupil in the early stages of learning.

"Notes on Volumetric Analysis." Enlarged edition. By J. B. Russell and A. H. Bell. (Murray.) 2s.

Useful for Teachers.

"Maxwell's Theory, and Wireless Telegraphy." By H. Poincaré and F. K. Vreeland. (Constable.) 10s. 6d. net.

The author demonstrates successfully that the theory can be translated into the language of everyday life without resorting to mathematics.

"Experimentelle Elektrizitätslehre." By H. Starke. (Teubner.) 6 marks.

A very up-to-date and excellent elementary account of the subject.

"Recueil d'Expériences élémentaires de Physique." Part II. By H. Abraham. (Gauthier-Villars.) 6.25 francs.

A collection of experiments in acoustics, optics, electricity, and magnetism.

"A Text-book of Physics. Heat." By J. H. Poynting and J. J. Thomson. (Griffin.) 15s.

The third volume of a well-known text-book.

"High Temperature Measurements." By H. le Chatelier and O. Boudouard. Second edition. Translated by G. K. Burgess. (Chapman and Hall.) 12s. 6d. net.

"Theoretical Chemistry." By W. Nernst. Revised edition. (Macmillan.) 15s. net.

"A Treatise on Chemistry." By H. E. Roscoe and C. Schorlemmer. Vol. I. New edition. (Macmillan.) 21s. net.

Natural History.

Botany.

"The Uses and Wonders of Plant-hairs." By Kate E. Styan. (Bemrose.) 1s.

A good subject for a course of nature-study.

"Trees. Vol. III. Flowers and Inflorescences." By H. Marshall Ward. (Cambridge University Press.) 4s. 6d.

A useful book for field-work in summer.

"Wayside and Woodland Blossoms." First and second series. By E. Step. (Warne.) 6s. each.

Revised edition with new plates; useful for identifications.

"Experiments with Plants." By Dr. W Osterhout. (Macmillan.) 5s.

Contains many experiments suitable for a elementary physiological botany; the appliances a very simple character.

Geology.

"The Face of the Earth." Vol. I. By Prof. Translated by Dr. H. B. C. Sollas. (Clarend 25s.

An advanced text-book of first-rate importan mainly with the geology of the mountains of the

"Landscape in History, and other Essays." Geikie. (Macmillan.) 8s. 6d.

Discusses the effect of geographical environme geological changes in determining the distributior lation and of the centres of government and of c and also in influencing literature and the interpr history.

Nature-study.

"Stories from Natural History." By Richard Translated by G. S. (Macmillan.) 1s. 6d.

Suitable for a reading-book in the higher sta elementary schools, and the lowest of secondary.

"The Country Day by Day." By E. K. (Heinemann.) 6s.

A guide to what the observant country residen see and notice.

"Peeps into Nature's Ways; being Chapters Plant, and Minute Life." By J. J. Ward. 7s. 6d.

"Nature through Microscope and Camera." Kerr. (Religious Tract Society.) 6s.

Deals with a number of easily obtained objects fully illustrated by photomicrographs.

"Practical Nature-study for Schools. Part I. book of Questions." 2s. 6d. "Part II., An Teachers only)." By O. H. Latter. (Dent.) 6

Part I. contains a large number of questions suitable subjects. Blank pages and spaces are l pupils' answers and drawings. The questions c answered as the result of direct personal observat

"Nature-study Lessons for Primary Grades." McMurry. (Macmillan.) 2s. 6d.

American, but very suggestive for elementary l pupils of tender years.

Zoology.

"A Students' Text-book of Zoology." Vol. Adam Sedgwick. (Sonnenschein.) 21s.

An advanced book on amphioxus, fishes, a reptiles, birds, and mammals.

"The Story of Reptile Life." By W. P (Newnes.) 1s.

The outline of a scientific treatise in no language.

"Wasps, Social and Solitary." By G. and E. (Constable.) 6s.

A record of field-observations in N. America.

The Nelson Navy Book. By J. C. Hadden (Blackie.) 6s.—This is essentially a "boys' book in glowing terms, and illustrated with gorgeous colour and in black and white. The story of o told from the early fights with Danes down to t day, and the last chapters tell of the "mann navy," "how to join the navy," and "traini navy."

THE PLACE OF SCIENCE IN GENERAL EDUCATION.[1]

THE importance to every man of a practical acquaintance with elementary science is obvious. Would it be thought possible that any nation could act so absurdly as to teach its children other languages, and leave them in complete ignorance of the tongue of the land in which they would have to pass their lives? Would it not then be incredible, if it had not become a too familiar fact, that the public schools have, until recently, excluded all teaching of the science of nature from their scheme of studies, though man's relation to nature is more intimate than to his fellow-countryman? We live, move, and have our being in nature; we cannot emigrate from it, for we are part of it. Yet our higher education leaves men, who in other directions are well informed, much as deaf-mutes in the presence of nature. They do not hear her most imperative warnings, and can only get on haltingly in their everyday intercourse with the natural forces to which their lives are subjected by means of the arbitrary signs of empirical custom. The recent introduction of some amount of science-teaching in our higher schools is quite inadequate, alike in kind and in degree. It can be only through a reform of the scheme of their examinations by the universities that we can hope to see science take the equal part with the humanities in general education to which she is entitled.

The place of science in general education may be considered under two different aspects: the intrinsic value of the teaching of science as a means of enlarging the powers of the mind; and, secondly, its relative value and place as compared with the teaching of the classics.

The elements of the science of nature, when properly taught, have a claim to a very high place in early general education, since nature is always close about us as a living intelligence and power, which responds to the questions put to her by experiment. The young mind finds itself no longer in the realms of the dead, deciphering from the inscriptions on their tombstones the history and opinions of past generations, invaluable as is such knowledge in its proper place, but in the open of light and life, where nature holds her school, taking all things, great and small, as the object-lessons of her teaching.

Two faculties of the mind which it is of the highest importance, especially in early youth, to enlarge and develop by exercise are wonder and imagination. Under the ordinary premature language-teaching of the grammar schools, even the wonder and imagination natural to young minds become so stunted in their growth as to remain more or less dormant throughout life. On the other hand, natural science brings them into full activity and greatly stimulates their development. Nature's fairy tales, as read through the microscope, the telescope, and the spectroscope, or spelt out to us from the blue by waves of ether, are among the most powerful of the exciting causes of wonder in its noblest form; when free from terror it becomes the minister of delight and of mental stimulation. And surely the master-creations of poetry, music, sculpture, and painting, alike in mystery and grandeur, cannot surpass the natural epics and scenes of the heavens above and of the earth beneath in their power of firing the imagination, which, indeed, has taken its most daring and enduring flights under the earlier and simpler conditions of human life when men lived in closer contact with nature, and in greater quiet, free from the deadening rush of modern society. Of supreme value is the exercise of the imagination, that lofty faculty of creating and weaving imagery in the mind, and of giving subjective reality to its own creations, which is the source of the initial impulses to human progress and development, of all inspiration in the arts, and of discovery in science.

Further, elementary science, taught practically with the aid of experiment during a boy's early years, cannot fail to develop the faculty of observation. However keen in vision, the eyes see little without training in observation by the subtle exercise of the mind behind them. From the humblest weed to the stars in their courses, all nature is a great object-lesson for the acquirement of the power of rapid and accurate noting of minute and quickly-changing aspects. Such an early training in the simpler methods of scientific observation confers upon a man for life the possession of an inexhaustible source of interest and delight, and no mean advantage in the keen competitions of the intellectual activities of the present day.

Training in the use of the eyes develops, at the same time, alertness of the intelligence and suppleness of the mind in dealing with new problems, which, in after-life, will be of great value in facing unforeseen difficulties of all kinds, which are constantly arising.

Science, practically taught, does more, for, under the constant control of his inferential conclusions by the unbending facts of direct experiment, the pupil gradually acquires the habit of reasoning correctly from the observations he makes. In particular, he learns the most precious lesson of great caution in forming his opinions, for he finds how often reasoning, which appeared to him to be flawless, was not really so, for it led him to wrong conclusions. Further, from the constant study of nature, the student comes so to look at things as almost unconsciously to discriminate between those which are essential and those which are only accidental, and so, gradually, to acquire the faculty of classing the facts of experience, and of putting them in their proper places in a consistent system or theory. Are there any other studies, it may be asked, by which, in the same time, a young mind could develop an equally enlarged capacity for correct reasoning and acquire so wide an outlook? Yet, notwithstanding the immense intrinsic value of its teaching, science is but one of the studies which are necessary for a wide and liberal education. Intellectual culture, or, in other words, the whole mind working at its best, requires, besides the training of all its powers harmoniously by the study of nature, an acquaintance with many other kinds of knowledge, especially of human history and the development of human thought, and of the human arts. Humanistic studies and experimental science are equally essential, and, indeed, complement each other. Either alone leaves the mind unequally developed, and its whole attitude one-sided, and so produces a narrow type of mind which is incapable of taking a wide view even of its own side of thought, and has but little sympathy with any subject outside it.

In the scheme of a liberal education, literature and languages, which include the habit of clear thinking in suitable words, should have a large place. It must, I think, be conceded that the languages of ancient Greece and Rome, which are highly developed for the conveyance of delicate shades of thought, still stand unsurpassed as means of training in thinking in association with correct expression, while, at the same time, they feed the mind with the great ideas and the heroic deeds of the past.

[1] From an address delivered at the anniversary meeting of the Royal Society on November 30, 1905, by Sir William Huggins, K.C.B., O.M., President of the Society.

In the methods of study of these languages, as actually carried out in the public schools, surely great reforms are possible. The complaint of the classicist, John Milton, who had himself been a schoolmaster, in his "Tractate on Education," written about twenty years before the foundation of the Royal Society, is urgently true to-day. He wrote: "We do amiss to spend seven or eight years merely in scraping together so much miserable Latin and Greek as might be learned otherwise easily and delightfully in one year." Later, Evelyn made a similar complaint. "At most schools," he wrote, "there is a casting away of six or seven years in the learning of words only, and that, too, very imperfectly."

Quite recently, the number of years usually given to Latin and Greek in the public schools has been shown by a striking experiment to be greatly excessive.

Last March, the Minister of Education gave an account in the Prussian Chamber of the so-called "reform schools," in which the study of the classics is begun for Latin at twelve, and for Greek not until the age of fourteen, with the encouraging result that, of 125 pupils who presented themselves for the leaving examination, only four failed to pass, and, of these four, three succeeded three months later. Experience showed that, as the result of beginning Latin and Greek at a later age, the interest of the pupils in their work was much keener, and their progress much more rapid.

Improved methods of teaching the classical languages which would permit of the beginning of the study of them at a later age would leave ample time for an early training in experimental science, which must soon come to be recognised as an essential part of all education.

In future, no grammar or higher school should be considered as properly provided for unless furnished with the necessary apparatus for teaching experimentally the fundamental principles of mechanics, physics, and biology. The pupils should have the use of a small astronomical telescope, and of microscopes for biological work. Such apparatus and instruments can now be purchased at a very small cost.

Clearly, it is only by such a widening of the general education common to all who go up to the universities, before specialisation is allowed, that the present "gap between scientific students careless of literary form, and classical students ignorant of scientific method," can be filled up, and the young men who will in the future take an active part in public affairs, as statesmen and leaders of thought, can be suitably prepared to introduce and encourage in the country that fuller knowledge and appreciation of science which are needed for the complete change of the national attitude on all science questions, which is absolutely necessary if we are to maintain our high position and fulfil our destiny as a great nation.

THE BOARD OF EDUCATION AND SECONDARY SCHOOLS.

THE report of the Board of Education for the year 1904–5, which has now been published, contains an interesting section dealing with the relations of the Board to secondary schools. The following particulars are taken from this part of the report.

The regulations for 1904–5 did away with the distinction of recognised secondary schools into Division A and Division B schools, and by defining what is meant by a secondary school as recognised by the Board and by *establishing a uniform scale* of grants, encouraged the better organisation of this important grade of lines suited to the needs of different localities. basis upon which the grants were then placed fc time has had important results, and the number recognised during 1904–5 rose from 482 (th recognised in the previous year) to 576, while it is that the number of scholars taking the appro will be 63,782 as compared with 52,466 in the pre

The number of secondary schools recognised or of recognition has during the current year further to 705, or more than three times the number of schools and classes in receipt of Government g years ago. During the same period the amou grants earned has increased by more than £100,

The regulations issued in April, 1905, contain changes, which will secure to the schools greate in their organisation and curriculum, and carry fully the principle on which the regulations of were based.

The policy of the Board, in apportioning t funds placed at its disposal by Parliament for tl of promoting the efficiency of secondary schools, concentration on that part of the work which se Board to form the kernel of the course these sch or should offer, no matter what their type. The grants in support of particular branches of formerly made to these schools, or to classes in t therefore been merged in the main grant payat approved four years' course beginning at twelv age or upwards. The only exception made is in of schools which, not being able to qualify for nition as secondary schools, have been hitherto grants to "science and art day classes." If reasonable prospect of their qualifying after an for full recognition under these or other regulati Board, the grants may be continued during that

Where a school, after a reasonable interval cannot reach the necessary level of efficiency, fails to carry an adequate proportion of th through the third and fourth years of the compl the Board will withdraw its recognition and to make grants. Such a school will not, in secondary school. It is a source of satisfacti Board to note that school authorities have in n taken steps to ensure that scholars shall not, wit reason, be withdrawn from school before comp course, a policy which the ascending scale of the four successive years can hardly fail to sup Board is also glad to be able to report that ar ment has now been made by which "a school receipt of grants which is certified as being sa conducted according to the regulations will rece the session a payment on account, in advance, ordinarily to one-half of the grant received for th session."

No change has been made in the new regulati as regards the general character of the course Board expects all schools receiving a grant to pr certain modifications have been made in the det regulations which allow schools of proved efficien freedom in the organisation of their work.

The minimum number of hours required fc matics and physical science has been slightly rec otherwise the hours allotted to each of the th groups of subjects remain the same as last year, in girls' schools which do not have regular classes the requirements as to the amount of ti devoted to these groups of subjects may be r

meet particular circumstances provided the instruction in them is good and sufficient. Whatever views may be held as to the amount of instruction desirable in girls' schools in comparison with those for boys, it is clear that the claims on a girl's time out of school hours are larger and more varied than they are on that of a boy, whilst the dangers of overpressure are at that age much greater. The compression, however, of all the school work into the morning hours may in turn lead to overpressure quite as serious as that which results from too long a school-day. The intensive method of teaching, if it is thoroughly carried out, puts a greater strain both on the pupil and on the teacher than the older ambling ways, and it is doubtful whether a school session for either boys or girls should ever exceed three hours. When it reaches this limit, therefore, the regulations allow the afternoon meeting to be reduced to an hour and a half. Further, in a secondary school of any kind favourably reported on by the Board's inspectors, in respect of instruction and organisation, deviations from the approved time-table may be allowed, with the inspector's previous approval, in order to meet the temporary needs of a particular class or a particular branch of instruction. It will be required in such cases that the spirit of the regulations is observed and no diminution made in the time required to be given during each year to any group of subjects.

Although it would be inexpedient and unjust to withdraw approval, and the support given hitherto, from those schools which have already been organised with a curriculum which is specialised from the first on the side of applied science, if it can be shown that such a course is suitable to the circumstances of the locality in which the school is placed, yet it is not the intention of the Board to sanction the adoption of this special course in any fresh school.

The Board is convinced that early specialisation is detrimental to the scientific method which it should be the aim of all types of higher education to foster, each in its own way. The student of the natural sciences, whose training in languages has been neglected at school, will be no less hampered than the student of the humane branches of knowledge who is ignorant of the main results of modern discovery in the natural world, while the man of affairs is equally in need of some measure of the double training. In secondary schools, therefore, aided by the Board, specialisation on the side of literature or of natural science to a degree which carries with it a higher rate of grant will not be allowed to commence before the third year of the course, but it may then look to science, to the classics, or to modern languages for the larger claim upon the time of the scholars. The Board believes that in a thorough linguistic and literary training for the student of modern languages Latin is a necessary factor, while as a means of introduction to the larger world of public affairs and international relations, or as an instrument of accurate expression for clear and logical thinking, no modern language can compare with French. The place of Greek will naturally be that of the third language in a classical curriculum, while German will frequently be the third language on the modern side, though in some schools Spanish, Italian, or another language may suitably be substituted for it. In the regulations of 1904–5 it was announced that other languages than English might by special permission of the Board be omitted in certain schools which provide an English course of a very thorough kind, occupying not less than 7½ hours a week, inclusive of the time given to geography and history, under a staff specially qualified to give an adequate linguistic and literary training in the national tongue.

The rule as to the commencing age for the course has been altered by doing away with reference to the average age of the scholars and substituting a minimum age for the ordinary course, and by attaching no fixed age to the special courses, which will, as a rule, be open only to those who have passed through two full years of the ordinary course.

The Board is also prepared to leave the question of the amount of fee to be charged in recognised schools to the school authorities in each case, provided the school is adequately staffed and equipped, and in a sound financial position, and provided it is clear that no injurious competition will arise with other efficient secondary schools in the same area. At the same time, it is important that parents and others should recognise that good education cannot be bought cheaply, and that two things must always be borne in mind if secondary schools are to serve the purpose which they have in view; the children sent there must be fit to profit by the education given, and the secondary school must correspond to its title, and must give an education higher in scope and character than that of an elementary school. If these two conditions are not satisfied the money of parents, ratepayers, and taxpayers alike will be wasted on the maintenance of a school which is a secondary school only in name.

For this reason the Board cannot regard with satisfaction the attempts sometimes made to combine an elementary and a secondary school under one headmaster. It will frequently be found that in such cases the teaching given is not much more than elementary, or that the time spent in the secondary department by the children is too short to enable them to get the advantages characteristic of a secondary school.

For the same reason the Board has impressed on local authorities the importance of giving to the headmaster of a secondary school, if not an initiative in certain matters, at any rate free access to the body, however constituted, to whom is entrusted the government of the school. The Board considers it to be most important that the views of the headmaster on questions of general policy and of the staff should be placed at the service, and receive the consideration, of any such body.

In another section of the report the results are given of the scheme arranged by the Board for the employment of foreign teachers in English secondary schools—to which frequent reference has been made in these columns. No fewer than fifty-eight English teachers, forty-one men and seventeen women, have been placed for the period of a year in French schools, and the first batch of five men went at the beginning of the present school year to Gymnasien in Prussia. The progress is naturally slower in this country, but eight French men teachers and six French women teachers have received appointments for a year in England, among them one at Harrow. A number of other headmasters and headmistresses have signified their intention of making appointments next year. English teachers have reported that they have greatly benefited by their period of study abroad under conditions that bring them into close touch with the life and thought of the people, and more than one headmaster in this country has expressed himself as satisfied that his pupils have much improved in their command of French as the result of these conversation classes. It is hoped to find appointments for German teachers in English schools next year, but the agreement with Prussia was concluded too late in the autumn to permit of more than one being placed in 1905.

The important report of the committee upon the proposed system of school certificates is referred to again in this report. The Board has received a number of criticisms and

comments from the universities, professional bodies, local education authorities, and other persons to whom the proposals of the consultative committee were circulated, with a request for such suggestions and remarks as appeared desirable or necessary. It seems clear from a careful consideration of these comments, that in the opinion of their authors the proposals of the consultative committee are educationally sound and command a general approval.

HISTORY AND CURRENT EVENTS.

Do we realise that we are living in an era of revolution, and that the year 1905—which has just closed—may be regarded by the future historian as remarkable as the year 1848 is to us? Only a twelvemonth ago we were noting in these columns the arrival of a new State in the list of sovereign powers—the State of Panama. And since then, though quite strictly the kingdom of Norway cannot be said to have come into existence, yet it has started on an independent career, and has given Europe another sovereign and a new royal family. The new king has, to the pleasure of Norway, taken the name of Haakon, after the name of the last king who ruled over only Norway, and died in 1380. His marriage led to the union of Calmar, by which all three Scandinavian kingdoms were connected, until the religious revolution of the sixteenth century started Sweden on an independent career. Norway was connected with Denmark until the fall of Napoleon, when Sweden was allowed to annex Norway at the cost of Denmark to compensate her for the loss of Finland to Russia. And now, by one of the most peaceful revolutions the world has ever seen, free-trade Norway has dissolved that forcible union and has left protectionist Sweden, each to work out its own destiny.

"PEACEFUL" is the last word we should use in speaking of the revolution which is going on in Russia. What is really happening in that huge empire we cannot yet know. Our remarks thereupon must be tentative at the best. In some respects, one is tempted to liken it to the French Revolution of 1789–91. There is apparently the same paralysis of government, the same destruction of property, both in town and country, by bands of people who are demanding rights—the rights of the have-nots against those who have. There is the same intention on the part of the Sovereign Ruler to be the saviour of his people, the same powerlessness of that ruler against a reactionary court. But Russia is much larger than France, and there is, partly for that reason, an absence of that desire for unity which finally gave a single direction to the energies of new-born France and put an end to anarchy. One cannot anticipate a united Russia hurling herself on the nations of either Europe or Asia. The "left" are demanding a constituent assembly based on universal suffrage. But, if this were to come into existence, its parties would probably be more divided than those of the French convention.

SOUTH and west of Russia is Hungary, the land of the Magyars and of other nations. The age-long conflict between them and their dynastic rulers, who a century ago ceased to be nominal heads of the Holy Roman Empire that was Germany, is as intense just now as it was in the days of Kossuth and of Deák, whom our fathers knew so well. Is it by sympathy with Russian reformers or is it of their own motion that the Magyars are demanding universal suffrage as a cure for their chronic evils? Hungary used to be compelled to ally with Austria for fear of the then militant Turk. Turkey is now no longer militant—at least she is not dangerous north of the Danube. Christian States exist in all but full sovereignty between the Austro-Hungarian dominion and the ruler of Constantinople. And therefore it is that Hungary can afford to quarrel with Austria, almost to the point of breaking. Economically, at least, she wishes to be independent.

AND, lastly, to neglect the present phase of Macedonian politics, which we may regard as only a stage in the slow revolution by which Europe may eventually solve the Eastern Question, we turn to our own country, where the month of December has seen a revolution too. From causes which still appear somewhat obscure, the party which has conducted our affairs for ten years, and has been regarded, for some of its actions, with almost as much dislike, not to say hatred and indignation, by some amongst us, as the Russian autocracy, has ceased to rule, and a Liberal Cabinet has been formed which will dissolve Parliament and appeal to the country. We have called this a "revolution"—using the same word as we apply to events in Russia, Scandinavia, and Austria-Hungary. The Liberal papers have described it as "overthrow of the Government," &c. How differently these words sound when applied to the affairs of Great Britain and Ireland! Why? Is it because we are a little country? That we are therefore homogeneous? That we have fought out all this long ago in the seventeenth and eighteenth centuries?

ITEMS OF INTEREST.

GENERAL.

MR. AUGUSTINE BIRRELL, K.C., has been appointed to the office of President of the Board of Education, with a seat in the Cabinet; and Mr. Thomas Lough, M.P., has been appointed parliamentary secretary to the Board.

THE new regulations for the teaching of geography in secondary schools, issued recently by the Board of Education, formed the subject of a leading article in the *Morning Post* of November 23rd, in which the letter of the regulations was subjected to some captious criticism while the spirit which inspired them was disregarded. Well, such is the way of the world: no matter what is suggested or done, there are always persons ready to remark that something else would have been much better. In reply to the article, Mr. E. R. Wethey and Prof. L. W. Lyde, writing as practical teachers of geography in the class-room, condemned the attitude taken in the leader and expressed their appreciation of the intentions of the Board to encourage the study of geography in schools when scientific methods are followed. The point of view of the eloquent advocate of regional geography was described by Mr. H. J. Mackinder in an article contributed to our contemporary on December 5th. Unfortunately, Mr. Mackinder has misunderstood the opening sentence of the recent document, which states that the regulations for secondary schools prescribe "a course of general instruction, including geography." This sentence refers, of course, to the complete regulations covering all the work of a school, and not to the new regulations for geography just issued separately, so that Mr. Mackinder's censure of the Board for a supposed suggestion that geography should be combined with general knowledge has no point of application.

THE conclusion at which we have arrived, after considering the opinions of geographical experts expressed at various times on platforms, in papers, and in articles, is

rule they are altogether unable to understand subject is not the only one of importance in time-table. They propound schemes or publish the elementary parts of which are hopelessly ble, while the remaining portions would form priate subjects for the training of cartographers ists, but are out of place in the school. Just as rs ago practical chemistry meant drill at test- if every pupil was to become an analyst, so according to those of its experts who are un- ith modern tendencies, should be taught as if l were intended for an explorer. In a sentence, rs usually fail to recognise that a secondary not a technical institution, and because of their o distinguish between education and instruction ct remains a multifarious mixture of details that be comprehended rightly by the elect among d pupils.

chstone of educational value should be applied partments of school work—whether literary or Secondary schools ought not to be concerned utilitarian sides of subjects (though expediency dictates to conviction in this matter), but with ce upon the mind. Geography can certainly be aluable means of mental training, but only by most of the material which specialists at present hould be assimilated. The Board of Education scientific method, which is now the aim of all ork in schools, to be applied to geography, and that the Board will persist in regarding as nly that kind of geographical teaching in which is an active partner, and is sharpening his own f inquiry, imagination, and reasoning by work idually in the class-room or laboratory, with lessons in the open air. Every teacher should guide this work into efficiency; and it is better rporate life of the school when the staff consists nasters than when specialist teachers take their through the whole school. There is, of objection to a teacher particularly interested ct being given the opportunity of exchanging w and then, but that is quite a different matter hing by specialists. Few teachers have any owledge of geography, and there is no reason should have, if we understand the Board's aright. Draw up a course in which the pupils or themselves—not memory work, but exercises ture of problems—and the Board is apparently o approve it if a view of the whole world is he four years' course.

ners ought to be glad that the Board desires ct to be studied in schools by the methods other sciences. Perhaps when these methods in operation in geographical teaching for a few ubject will prove so valuable a factor of scientific hat it will be considered essential in an educa- rse, and we shall not hear the remark, now made in scientific circles, that geography is not Here we are not concerned with the claims of o a recognised position among the sciences, but that the only way to justify a place in education w the general direction indicated by the new , and leave experts to elaborate their views for of technical and commercial schools.

posed to hold a vacation course of lectures and work in geography at the Oxford School of , probably between August 8th and August 24th. The number of students will be limited, so far as regards practical work. Any communications should be addressed to the Director, School of Geography, Oxford.

The London County Council has arranged to hold another conference of teachers on January 4th, 5th, and 6th, 1906, and there will be two meetings on each day at the Medical Examination Hall, Victoria Embankment, W.C. Addresses will be delivered at the first meeting by Colonel Fox, inspector of physical training, Board of Education, on "Physical Training in Elementary Schools," and by Mr. W. Langbridge on "Physical Exercises in the Classroom." The discussion will be opened by Mr. W. L. Clague. At the second meeting addresses will be delivered by Dr. Kerr on "The Position of Physical Exercises in the Infant Department of the Elementary School," by Mrs. Kimmins on "The Educational Value of Organised Play," and by Miss Kingston on "The Inter-relation of Drill and Organised Play." Addresses will be delivered at the third meeting by Mr. P. J. Hartog on "The Teaching of English," and by Mr. C. E. Rice on "The Teaching of English Literature." The discussion will be opened by Mr. F. S. Boas. At the fourth meeting Miss M. A. Howard will speak on "The Teaching of History," and Mr. H. Millward on "The History of London as Part of a History Scheme." Addresses will be delivered at the fifth meeting by Mr. Shadrach Hicks on "The Function of the Trade School," and by Mr. Percy Sykes on "The Training of Crippled Boys in Toy and Cabinet Making." Addresses will be given at the concluding meeting by Mr. J. L. Holland on "Trade Schools for Girls," by Mrs. Oakeshott on "The Trade Schools of Paris," and by Miss Smith on "An Experimental Day Trade School for Girls." No charge will be made for admission to the conference. Application for tickets of admission should be made to the Chief Inspector, Education Department of the London County Council, Victoria Embankment, W.C.

The programme of the North of England Conference to be held on January 5th and 6th has been published. On January 5 the subjects for discussion in the morning session will be "Some Difficulties in the Administration of the Education Act, 1902," and "Local and Government Contributions to Education." Papers will be read by Canon Moore-Ede and Mr. Ernest Gray, M.P. In the afternoon of the same day the "Staffing of Primary Schools" will be considered, and a paper by Mr. A. R. Pickles will be read. On the same occasion the question of "The Pupil Teacher Element in Secondary Schools and in Pupil Teachers' Centres" will be discussed. The subject will be introduced in papers by Miss S. A. Gardiner and Mr. A. J. Arnold. At another meeting on the same afternoon "The Teaching of Elementary Mathematics" will form the subject of discussion, and a paper by Prof. R. A. Sampson will be read. On January 6th, in the morning, the "Regulations for Secondary and Higher Elementary Schools" will be introduced in papers by Messrs. W. Edwards and W. J. Abel. During the afternoon of this day, two meetings will consider other important questions. The "Organisation of Evening Classes" will be introduced in papers by Principal J. H. Reynolds and Mr. J. Crowther. "Physical Training" will be the subject of papers by Prof. Thomas Oliver and Captain H. Worsley-Gough. The "Simplification of Curriculum in Elementary Schools and Better Method of Testing Results" will be introduced to meetings by Canon Finch and Mr. G. T. Hyden. The morning meetings will be held in the Town Hall, and the afternoon meetings in Armstrong College, Newcastle-upon-Tyne.

THE Board of Education has issued a circular dealing with the extraneous duties often required of an elementary school teacher. The circular points out that it is not uncommon to find, either in the advertisement of the vacancy or in subsequent correspondence with applicants for the post, an intimation that the teacher will be required to play the organ in church, or teach in the Sunday-school, or to perform some other duty unconnected with the work of the school. The Board reminds local education authorities and managers that any such requirement is invalid, and that its enforcement may involve a refusal by the Board to recognise the teacher, and, further, may even disentitle the school to further recognition as a public elementary school. Even in cases, the circular continues, where the discharge of extraneous duties is not made a condition of appointment, but is merely suggested to applicants as a means of increasing their income, it would be right that a local authority should satisfy themselves that educational qualifications have not been subordinated to a capacity and willingness on the part of the candidate to play the organ in church, to teach at a Sunday-school, or to undertake any other work not connected with the usual duties of a teacher of a public elementary school. We welcome this definite statement by the Board as likely to put an end to a practice that has caused much injustice and friction, and as tending to raise the status of elementary school teachers, especially in country districts.

THE Public Schools Science Masters' Association will meet for the annual conference on January 20th at Westminster School. The president for the year, Sir Oliver Lodge, will speak on the place of science in general education. Papers will be read upon the army examination and on the possibility of introducing a comprehensive syllabus of science-teaching within the time limits of a classical curriculum. After the conference there will be an exhibition of scientific apparatus by various makers in the new science buildings of Westminster School.

IT has been decided by the Senate of the University of London that a Higher Standard School-leaving Certificate shall be awarded in future to pupils who have pursued an approved course of study for a period of years at a school under inspection approved by the University, and who either (*a*) have passed at one and the same time the School examination (Matriculation standard) in accordance with the regulations for the Matriculation examination affecting the subjects to be taken, and also on Higher Standard papers in at least three subjects; or (*b*), having previously passed the general Matriculation examination or the School examination (Matriculation standard), or fulfilled one of the other tests of fitness to be admitted as a student for the time being prescribed by the Senate, have passed on Higher Standard papers in at least three subjects.

THE Modern Languages Holiday Courses Committee of the Teachers' Guild has issued its report on the courses at Tours, Honfleur, Neuwied, and Santander, held last summer, and has made its preliminary announcements for 1906. The attendance at the courses in 1905 was as follows:—At Tours, 42 students; at Honfleur, 52; at Neuwied, 34; and at Santander, 2. Last year, in the same centres, the numbers were 33, 38, 34, and 3 respectively. The growth of numbers in the French centres, notwithstanding the fact that some education committees no longer send so many students as formerly, is very encouraging to the committee. The special features of these courses are that they are limited to English-speaking persons, whose difficulties are largely special to such persons; that an experienced representative of mittee attends with the students; and that the are distributed in very small groups among their that they may have as full an opportunity as p learning conversationally the language of the visited. The committee is satisfied that th steady and growing demand for holiday courses on this basis.

FROM the preliminary announcements for 1906 that the Teachers' Guild has arranged course from three to four weeks, to be held in Augus centres where they were held in 1904 and 190 Tours and Honfleur, in France; Neuwied-am-I Germany; and Santander, in Spain. The repre of the English committee appointed to attend students will be:—At Tours, Mr. J. W. Long Honfleur, Mr. E. Buck, Christ's Hospital, West H at Neuwied, Mr. S. de Ste. Croix, Christ's Hospi Horsham. Don Fresnedo de la Calzada and M Beirne will, it is expected, be willing to act as l representatives of the committee for the Spanis A preliminary circular giving more detailed part arrangements will be issued shortly, and the Han which the final arrangements are indicated, will lished in May. The courses in each centre graduated to suit the relative proficiency of the To be able to derive profit from the courses, should have a fair grammatical knowledge of the of the country visited, and be able to read its with some facility.

SIR NORMAN LOCKYER delivered an address a tribution of prizes to the students of the Boro technic on December 4. He said we are no beginning of a renaissance, just as our forefat seven or eight hundred years ago, when the o the desire for learning put an end to the dark gave an impetus to education which has never clined. In those times Latin and Greek were t cations without which it was impossible for earn a livelihood in the few professions open to great demand, therefore, was for instruction languages. Times have now changed; the de in other directions; but our aim must be to m tion follow the lines laid down by the necessit times. We are in a world which has been entire by the advent of modern science, modern na modern industries, and it is obvious that if we the best in education it must be in relation to t great changes. In America, education is happil by the foresight of men who set aside tract valueless) land for the benefit of schools and col in America the advantages of technical instructio given to those who have obtained a universi Since the commencement of the education mo Japan, thirty years ago, that nation has becom power with whom we are proud to associate. T to the conclusion, Sir Norman Lockyer conti twenty or thirty years spent in Japanese fash set everything right. The sums spent on ed Germany and America considerably outweigh wh sidered a sufficient amount in England; and realise that if learning is to progress in this c shall have to pay for it.

IN the spring of last year, conferences on th of English literature and composition were held, chairmanship of Prof. Elton, between secondar in Liverpool and members of the University. T

being continued. At a recent conference Prof. ld occupied the chair. Mr. Robert Jackson, of demy, Anstruther, and lecturer on phonetics at ws University, read a paper on "Phonetics in l." He claimed that the thorough and experi- estigation of the formation of the sounds of the nguage for its own sake is a means of discipline re. Teachers correlate their facts in the study geography, natural science, and other subjects they can with a view to illustrate the principles nd effect. It is only when they come to teach -the instrument by which all symbols are learned t—that they throw scientific method aside. Mr. aid that this is wrong, and that his experience has him that phonetics can set it right, and that by hen it governs method from the infant school versity, there will be such a revolution in the f languages as is at present undreamed of. In questions, Mr. Jackson said that it takes a little st to impart a knowledge of principles, but that phonetics is not an additional subject, but a hich, by co-ordinating and simplifying the facts ge, actually saves time. He would not begin with pelling in the infant school. Reading ought at e entirely oral; pupils should be kept building nds into syllables and phrases until they can do erfect facility. Then they might be introduced , but the passages put into phonetic script should lready known. Phonetic spelling being based on ple "one sound, one symbol," pupils will be seeing and hearing—senses that are not developed method.

enth annual report of the commercial education of the London Chamber of Commerce for the g December, 1904, has reached us. From the learn that the commercial education certificates amber are recognised by both employers and as credentials of proficiency, and are of the portance to holders of them seeking positions in ms. The demand by employers for proofs of is becoming more apparent every year, and, in those having evidence of their commercial ns will, probably, be held to be eligible for positions in trade and commerce. While the r qualified employees continues to increase, it is to note the large number of students who are ving systematic instruction in day and evening all parts of the United Kingdom. Not only is ger amount of commercial education in progress, rapidly becoming more thorough and practical, gh the high standard and practical character of nations are maintained, the examiners' reports ore satisfactory results. There is, nevertheless, n for improved teaching and increased attention foreign languages and those subjects which the curriculum for a higher commercial educa- d to the needs of those destined to occupy the sitions in commerce.

OL of pedagogy has been inaugurated at the of Paris. The scheme is the outcome of some adopted in 1902, when the reform of secondary was under consideration; and the details, lately by the Minister of Public Instruction, have been by a commission of the council of the University. ance with recent regulations, incoming teachers vernment secondary schools—known as *collèges* —will be required, from 1907 onwards, to hold the diploma in pedagogy which the University will then be prepared to grant. The entire course is to cover two years; in the first the theoretical, and in the second the practical, side of the teacher's equipment will be dealt with.

THE Government of Victoria has decided to abolish the pupil teacher system. As the result of the report submitted by an advisory board appointed to consider the question of the training of teachers, a day training college is to be established at Melbourne in the grounds of the University. A two years' course will be given. A "practising school" will be provided, a number of scholarships will be available, and facilities will be afforded both for technical instruction and for graduating at a university.

THE report of the conference on the salaries of assistant teachers in London secondary schools, called together by the London branch of the Incorporated Association of Assistant Masters, has now been published. The resolutions passed by the conference were printed in our issue for July last (Vol. VII., p. 267), and it is unnecessary to repeat them here. The report deserves the earnest attention of local education authorities and other governing bodies throughout the country. From it we learn that, out of 328 men whose salaries are given, no fewer than 63·4 per cent. are receiving between £100 and £175 a year, whilst only 17·4 per cent. are earning £200 a year or more. A large proportion of the masters are in middle or even in later life. Thus in one instance the average length of service in the school is twenty-one years, and the average salary £173 6s. 8d. In another the average number of years in the profession is sixteen, and the mean salary only £152 11s. 9d. About half the men whose salaries are given are graduates, many of them graduates in honours. The average pay of the 328 men whose salaries are given works out at £162 16s. 6d. The average number of years they have spent in the profession could not be exactly calculated from the data, but it certainly exceeds twelve. Had these masters been working in a service with a scale such as the resolutions of the conference suggest, the average salary would be about £270.

ANOTHER striking fact brought out in the report is the small number of posts which provide what may be called a "marrying competence." A schoolmaster must be considered rash who marries with the prospect of never obtaining a better income than £200 a year, and it has already been pointed out how few there are who have any such prospect. Men who marry usually have to eke out their slender salaries by doing other professional work. Investigations show that about 50 per cent. of the assistant masters in London schools are married, and that two-thirds of these married men find it necessary to take work outside their school hours; while of the bachelors only about 25 per cent. voluntarily add to their professional duties. As the report insists, if the system is not kept within strict limits, it may become injurious to the interests of the schools, and, while under present conditions teachers would resent strongly any attempt to curtail the liberty they enjoy of using their leisure hours to their own advantage, yet there are many who would welcome such an improvement in the wage paid them by their school as would enable them to devote their whole energy to the welfare of the school with which they are associated.

AT the last annual meeting of the Association of Technical Institutions, two papers were read on the co-operation of employers in the technical training of their apprentices. The subject was deemed important enough to be referred to the council of the association for inquiry and report.

The report of the council only claims to be a first attempt to record in definite form the information at present available on the important question of the co-operation of employers and technical institutions in this country, with some typical examples of its working. The report analyses the answers given to a series of questions asked by the council on their form of inquiry under the following headings:—The trades to which the scheme of co-operation applies, the number of students affected by the scheme of co-operation, the payment of class fees, payment for books and material, and the association of employers with institutions. If regarded from the point of view of how few of the army of masters appear to interest themselves at all in the technical education of their workers, the report cannot be other than disappointing, especially in view of the different attitude of the employers in many parts of the Continent and of the United States. If looked at with the recognition of how recently technical instruction was introduced in this country, and in comparison with the attitude of employers ten years ago, the report is full of encouragement and the outlook hopeful.

THE Art Teachers' Guild has issued the first number of a new periodical, entitled *The Art Teachers' Guild Record*. The new publication, which is to be issued terminally, is designed to help to bind together those interested in the teaching of art in schools, and for the discussion of methods of art teaching.

INSURANCE of scholars against laboratory accidents is, says the *University Correspondent*, the latest development in German education. The Minister of Commerce and Industry has issued a recommendation that every student attending a technical school which belongs to or receives a subvention from the State should take out an accident insurance policy. The plan is to pay a premium of about 2s. 6d. a pupil annually for £50 in case of death, £800 in case of accident which leaves the student an invalid for life, and about 3s. 1d. a day for transitory inability to attend school on account of accident.

THE North-Eastern Railway Company is this winter continuing the arrangement—made two or three years ago—of offering on loan, for lecturing purposes, sets of lantern slides illustrating the holiday and historical centres through which the system runs. These slides are accompanied by readings on the subject, and are lent, free of charge, on application to the Chief Passenger Agent, York. Five lectures, too, are to be obtained at 6d. each, and sets of twenty-eight slides for each lecture can be loaned free. The titles of the lectures are:—(1) The Yorkshire Coast; (2) Tynedale and Northumberland Coast; (3) Teesdale and Lake District; (4) Wharfedale, Nidderdale, and Wensleydale; (5) York, Rievaulx, Richmond, Swaledale, and Durham. Teachers of geography would do well to avail themselves of this enterprising offer.

THE Rev. A. D. Perrott, assistant master at Cheltenham College, has been appointed headmaster of King Henry VIII. School, Coventry.

MR. T. P. NUNN and Miss M. Punnett have been appointed vice-principals of the London County Council Day Training College, Southampton Street.

AN examination for situations as Assistants of Customs is to be held in February. Candidates, who must be between eighteen and twenty-one on February 1st, will be examined in handwriting; arithmetic; English composition, including orthography; geography (general); digesting returns into summaries; copying manuscript (to test accuracy). Assistants of Customs serve a pr period of twelve months, and will not be admitt establishment until they have been duly certified a for the duties of their position. They receive sa mencing at £70 a year, rising by annual i of £5 to £105; and then, after one year, sul favourable report on capacity and conduct, annual increments of £7 10s. to £220, until abs the ranks of examining officers. At the exami July, 1905, for sixty vacancies there were 802 c The last day for sending in applications is Janua

THE Commissioners also announce an exami March for admission to the R.N.E. College as pr engineer cadets. Candidates must be not less tha and a half, and not more than sixteen and a h of age on May 1st next. The latest date fo application is February 15th. The subjects a metic, algebra up to quadratics, and geometry, of Euclid I.–III.; English; geography; Englis Norman Conquest to the present time; French, oral test; mechanics, with either physics or che cluding practical test; drawing, and one of the fol additional mathematics, German, and Latin. T or guardian of each probationary cadet pays annum during the period of training—five yea able and industrious engineer cadets can shorte At the end of the fourth year they are offered missions as engineer officers as may be available. pay of engineer officers in the Navy ranges fro a day as engineer sub-lieutenants to £3 a day a rear-admirals.

THE Civil Service Commissioners have issued t ing syllabus for geography, which will come int future open competitive examinations for clerksh Second Division of the Civil Service:—"The regions of the earth—forest, grass, and desert— and temperate—and the kinds of human activity each. The distribution of the more importa animals, and minerals, and their uses. Expl day and night, summer and winter. Latitude, and time. The circulation of water in all its for treated without reference to the sun and moon; stream currents; evaporation and condensatio rain, dew; rivers and springs; snow-fields an Land-forms: mountains and tablelands, volcano valleys, &c. Types of drainage-areas. Maps: h a map, and how to make a map of a small di tour lines, sections. The chief physical featu earth's surfaces, and the position of the principal countries, and of the great rivers, mountain-r The influence of natural features and physical on the habits and occupations of man, and he growth of towns. A somewhat detailed study c graphy of the British Isles, and a study in les the Mediterranean basin, and of North America Rocky Mountains. Such knowledge as is neces understanding of English history will also be A scheme, differing very slightly, is in force for entrance examinations.

SCOTTISH.

THE autumn meeting of the Classical Ass Scotland was held in Glasgow University. Pro the vice-president, occupied the chair. The cha that his interest in the objects of their assoc increased rather than diminished since he left

ore than ever convinced from what he knows of of matters in England and the colonies that they e eve of a great revival of interest in the classics. nbership of the English association is now about nd there are fresh accessions every day. The hip is not confined to teachers, but includes a ement of the educated public who believe in the classics. There is no desire as an association, England or Scotland, to make war upon any of studies which modern life has rendered necessary, ny way to be exclusive. It is not maintained that are the only elements in a liberal education; but tcher believes emphatically that in promoting learning a form of human culture which has great and increasing part to play in the modern being encouraged. The interest and value of it, being exhausted, are constantly increasing, and sibilities are being opened up, partly through in- knowledge of the whole of antiquity, and partly improved methods of teaching.

HARDIE, Edinburgh University, submitted the re- the committee on Latin pronunciation. This tates that the primary questions seem to be:— ther an effort should be made to secure greater and uniformity in pronunciation; (ii.) what is t aimed at in such a reform; (iii.) what are the which most stress should be laid. The committee that the first question is for the association to ter hearing their suggestions. As to question two, ought to be to pronounce Latin as the Romans ed it in the best days of their literature, or as ately as possible. As to question three, any bout pronunciation must be concerned with two a) accent and quantity, and (*b*) the system of he sounds to be assigned to various letters. The ost important for Scotland, the second for England. nd, owing to the comparative neglect of verse ons, accent and quantity are commonly inaccurate, eeling for rhythm seems to be not nearly so keen of the Tweed. On the other hand, the English Latin pronunciation is thoroughly unsound, and ents off from the scholars of the rest of Europe, the Scottish system approximates closely to the al standard. In the general discussion which the report, all the speakers supported the move- uniformity, and a very general preference was r the Scottish system of sounds, modified in spects, as opposed to the English. It was agreed ue the committee on the subject, and that the mitted should be circulated in all the chief schools ing colleges of Scotland, with a request that an n of opinion should be forwarded to the secretary.

nual business meeting of the Sloyd Association d was held in the E. C. Training College, Edin- Dr. Morgan presided over a large and represent- ndance. The secretary to the Board of Examiners a report on the examinations for teachers' certifi- educational woodwork during the past session. ee certificates were issued carrying the depart- ndorsement. Of these, ten were higher and ee lower certificates. The examiners spoke in st terms of the quality of the work presented to t they pointed out that dexterity in the use of not compensate for defects in theory, and that a mand of drawing was essential in all cases. Dr. in the course of an informative address on Training in American Schools," gave particulars of the manual instruction which is so prominent a feature in the American vacation schools. These schools, which serve so useful a purpose in the poorer districts of the great cities, have a triple function—(i.) To remove children from the evil influences of the streets and give them healthful recreative instruction; (ii.) to give them a taste of country life by means of excursions; (iii.) to serve as experimental schools in which new educational ideas may be tested without demoralising the work of the regular schools.

THE new university committees for the training of teachers have now been constituted, and a beginning has been made with a movement that cannot fail to have far-reaching effects on the educational system of Scotland. Mr. Struthers, secretary to the Education Department, showed his appreciation of the importance of the occasion by being present at the opening meeting of each of the committees. In a short address to the members on the nature and scope of their duties, he said that it is the intention of the Department to submit to them for their consideration and report the regulations they have drawn up for the training of teachers under the new conditions. They have been drawn up with the greatest deliberation and after the most thorough investigation of all the circumstances, and he hopes they will meet with general approval. Any suggestions for their modification will receive careful consideration, though it should be clearly understood that the Secretary for Scotland must be solely responsible for the shape in which they are ultimately laid before Parliament.

PROF. CHRYSTAL, who has been elected interim-chairman of the training committee of Edinburgh University, speaking at the Royal Society banquet, said that a few days ago a modest beginning was made in what he believed would be a great revolution in the educational history of the country. The new scheme for the training of teachers will attain a magnitude which very few people perhaps anticipate. It will permeate the whole of the educational system; and Prof. Chrystal has no hesitation in predicting that—with the exception of the older teachers—in the course of ten years there will not be in any school in Scotland a teacher who has not been trained in one or other of the four committees established for the training of teachers. This new institution will have far-reaching effects, not only on the schools of Scotland, but upon the universities also.

THE increase in the number of higher-grade schools owing to the abolition of what were known as advanced departments has led to the formation of associations of secondary teachers in public schools in the north and east of Scotland. The parent branch in the west of Scotland, where higher-grade schools have been chiefly centred hitherto, has done excellent service in the cause of higher education, and it is hoped the new associations will follow its example by making the discussion of educational aims, ideals, and methods their chief business rather than questions of local or imperial administration.

THE local examinations in subjects of science and art, conducted by the Education Department, will begin this year on April 28th, 1906, and continue throughout May and June. These examinations are open to all students in continuation classes, and presentation is entirely voluntary. All students who wish to sit for the examinations should make application to the managers of the classes which they are attending. It will then rest with the managers to determine whether they will make application for an examination, and, if so, in what subjects. Examinations

will, as a rule, be held in the second, third, and honours stages only. Applications for examination in the first stage of certain subjects of science, and in the first stage of design, will be considered in the case of candidates who can show that certificates in the first stage are required by the conditions of their employment or other special circumstances. Copies of the regulations for the examinations, and of the time-table of examinations, may be had on applying to the Education Department.

THE university court and senatus of St. Andrews University have resolved to celebrate, some time in July, 1906, the four hundredth anniversary of the birthday of George Buchanan. In asking for the co-operation of the other universities and various educational bodies, they state that the occurrence of so important an anniversary as that of this distinguished Scotsman and humanist should not be allowed to pass unmarked, and St. Andrews, where he was a student, and afterwards principal, seems the most suitable place for the celebration. Dr. J. Peddie Steele, of Florence, in view of the celebration, has generously offered a prize of one hundred guineas for the best essay on sixteenth-century humanism as illustrated by the life and work of George Buchanan. The competition is open to alumni of the four Scottish universities.

IRISH.

THROUGH the generosity of Sir Otto Jaffe and his brother, the equipment fund of Queen's College, Belfast, has been closed. Sir Donald Currie had offered £20,000 on condition that another £20,000 was raised before Christmas. Early in December £17,000 had been subscribed, when Sir Otto Jaffe, the chairman of the executive committee of the fund, completed the sum by a further subscription of £3,000, in addition to £1,000 which he had already contributed, his brother, John Jaffe, of Nice, having also previously given £1,090. University work in Belfast should be greatly benefited by this equipment of £40,000, which is all the more valuable as showing what can be done in Ireland by private effort.

THE Department of Agriculture and Technical Instruction will award in July, 1906, ten open scholarships and ten limited scholarships to assist domestic economy students training for teacherships to undertake the full course of instruction at the Irish Training School of Domestic Economy in Kildare Street. The scholarships will entitle the holders to free admission to the full course of training as teachers of domestic economy subjects. They will be awarded by competitive examination, to be held in Dublin, Belfast, Cork, and Galway, on July 3rd, 1906. The candidates must have been born in Ireland or resident there for three years, and be between nineteen and thirty on September 1st; they will be examined partly on paper and partly viva voce, in arithmetic (100 marks), English (100), Irish or French or German (100), and reading aloud (25). The standard will be that of the middle grade of the intermediate examinations. The limited scholarships are reserved for students already attending local technical schools or classes. These may be nominated as candidates for the examination by the local committee, which must also guarantee to pay ten guineas, being half the fees for the full two years' course of instruction. Names of candidates must be forwarded to the department before the end of April.

DR. EDWARD MAGENNIS has issued—as a leaflet—a summary of a paper on physical deterioration in the schoolroom, which he read in the Section of State Me the annual meeting of the British Medical Assoc Leicester last summer. During the past fifty years has lost by emigration 4,000,000 of her people, 80 of whom have been between eighteen and thirty-f of age; thus 3,000,000 of young, healthy adults h to enrich other lands. What is the result? No decrease in the marriage-rate and birth-rate, but less healthy both in body and in mind. And hov latter looked after? There are 856,827 of them rolls of primary schools, many of whom have considerable distances in fine or wet weather. If w is no provision for drying their clothes; the scho bleak and cold, and possibly fireless; and the po children must sit and shiver for hours. As a schools are on unhealthy sites, and the sanitary ments are defective. The cure? "A medical i of schools should be imposed as a public duty school authority." Dr. Magennis's criticism is n on primary schools, but the principle holds for al and places where teaching is done.

LAST term was characterised at Trinity Colle further development of the courses of lectures on e having special reference to the teaching diplom have been specially arranged by Prof. Culverwell, fessor of education in the University of Dublin, be continued during next term. The full course o tion will extend over two years, and is intended actually engaged in teaching. There were last t series of lectures, one free to the public, consist course of six on the Herbartian psychology of id educational applications. These have been v attended. The other series has been limited to tl pay the fee of £1 1s. per term, and has dealt history of education. Teachers taking the full cc be granted a certificate, and will then, if otherwis be admitted to an examination for the diploma in e

THE Hermione lectures at Alexandra College year most successful. Four lectures were delivere George Clausen on the past schools of painting relation to those of the present day. The firs dealt with the earliest painters, from Fra An Raphael, the second with Titian, Rembrandt, successors, down to Reynolds and Gainsboroug third was on Turner, Constable, and the pre-Ra and the last dealt with the modern French sch Whistler and Watts.

THE Government has been appealed to by the C of Irish Catholic Laymen to appoint another ed commission. It is imperative, the committee urg either by a Royal commission or by other effectiv an inquiry shall be directed to test how far the U of Dublin and its sole college, Trinity College, I vided, or are capable of providing, higher educ Irishmen, adapted to the needs and circumstances denomination. Trinity, it is pointed out, claims national university, and to be wholly unsectarian governing body, the Board, consists exclusively of of the Protestant Episcopalian Church, and ir maintaining a divinity school for the educatior Protestant Episcopalian clergy exclusively as an part of the college. The majority of Irish Cath debarred, on conscientious grounds, from entering and, if they did enter, under existing conditions no prospect of their securing, within any reasona adequate representation on the governing body.

WELSH.

question has again been raised: Are the county diate schools too numerous? Colonel Pryce Jones, speaking at Llanidloes, said that the present did not seem to him satisfactory. A secondary should be a secondary school, and not merely a elementary one, nor yet a low-grade university He stated that the share of the county funds tgomeryshire in some county schools came to £8 and £9 per scholar, and in others to between d £16. There are 95 intermediate schools in the total number of pupils is 10,413, and the for each school, therefore, is more than 109. Pryce Jones stated that in Germany there are condary schools educating 375,000 scholars, each eraging about 268. In Montgomeryshire, he said, age number of pupils in a county school was

e Welsh county, Denbighshire, the education has instructed the county architect to provide a arden in all new rural schools. Further, in all the enlargement of existing schools, the architect ovide for the addition of a garden. The same intends to make provision in all new schools for and laundry classes.

tal number of pupils in all the county schools in equivalent to 5 per thousand of the population. nethshire it is more than 10 per thousand. The nber of pupils is, as stated above, 10,413. There he Welsh county schools 74 headmasters and 21 resses, 247 assistant masters and 243 assistant s. This is an average of more than 17·8 pupils her.

FRED THOMAS has declared in favour of putting on a frankly secular basis. He claims that the a State, has nothing to do with the teaching of n either churches or schools. This, of course, is position of Mr. Lloyd George, Mr. Herbert d others of the Welsh party, who hold that the uld be taught in the schools, if not, indeed, un- tional religion. The Calvinistic Methodists of have, in opposition to Sir Alfred's view, passed ion that no system of public education should be which does not include Bible teaching as a means eligious and moral training of school children.

ry, the Board of Education has determined to the appointment of the revised staff, and to take administration of St. Helen's Roman Catholic which is at present under the Barry Education e. The education committee, it is stated, intend e action of the Board of Education in a court of th regard to Montgomeryshire, Lord Londonderry say that the Board of Education was prepared to the voluntary schools, which the County Council maintain, by withdrawing all powers from the committee. The Defaulting Authorities Act case. On the other hand, "the County Council the elementary education of its area, and leaves ation of the children, even its own undenomin- chools, to the precarious bounty of private per- With these the Board of Education cannot deal, position was not contemplated in the Defaulting s Act.

KUNO MEYER, in addressing the Cymric Society at has dwelt with severe criticism on university methods of teaching in British universities of Celtic and other subjects. Prof. Meyer pleads for an introduction of methods of research and scholarship in university teaching. It is a mistake, he thinks, to suppose that such methods should be reserved for advanced students. They ought to be practised from the very outset and at all stages.

A DEPUTATION has been sent to the Board of Education in reference to the recent recommendations of the Board that paper should be used instead of slates in the schools. The deputation stated that in the writing-slate trade alone they paid from £12,000 to £15,000 a year in wages. It was stated there was no demand from teachers for giving up slates, and that medical opinion was divided. In Germany there was a return to the slate, on the ground that the glare of white paper was injurious to eyesight. The insanitary argument was removed by the new method of slate-cleaning. Lord Londonderry said the department did not intend to put pressure on the local authorities. It was a matter of option for the authorities whether slates were used or not. The deputation, it is said, intend to send circulars to the local education authorities on the subject.

RECENT SCHOOL BOOKS AND APPARATUS.

English.

Scott's Ivanhoe. xxix.+471 pp. (Oxford University Press.) 2*s.*—The Oxford editions of several English poets are deservedly well known and highly appreciated. The Oxford University Press therefore proposes to supplement these volumes with a new series in prose as well as verse, and one of the first to be issued now lies before us. Nothing that is not commendatory can be said of this edition of Scott. It is not an educational volume, but prepared for the general reader. The price is low, the printing is good, the illustrations are excellent, and altogether this is a volume which ought to be snapped up eagerly.

Children of the Empire. Part II. By J. Finnemore. 1–146 pp. (Chambers.) 1*s.*—This book breaks new ground, and in a very pleasing way introduces children to their fellow-children thousands of miles away. The stories are not snippets, and a good deal of information is conveyed in them.

In the Reign of the Coyote. By K. Chandler. 1–160 pp. (Ginn.) 2*s.*—This is an admirable book for an imaginative child, but we would much rather have the child's "links" omitted, for the volume is a genuine contribution to folk-lore. The reign of the coyote and the eagle, the stories of the dead who "don't want to come back," the persistent story that man was made by the beasts, all this takes us to other times, other continents, and other races. There are close parallels in Burma to these curious relics of early North American Indian belief. The pictures are worthy of the text.

Macmillan's New Globe Readers. Book V. 1–264 pp. 1*s.* 6*d.*—An admirable selection of good matter written by well-known authors. If books like these can be used as examples of what may be found in the school library, they will serve their purpose well; but is the school library *demanded* by the Code? We complain loudly of children who do not like reading; will no gifted child arise and rend us?

For younger readers still, *Blackie's Model Reader*, 1–206 pp., Book III., 1*s.*, is beautifully illustrated and well arranged; the picture stories at the end are quite

suggestive of a possible development in the art of making children think—a thing which (*pace* the books and teachers) they like doing.

The Masque or Pageant of English Trees and Flowers. The Australian Cousin, a Play for Girls. Both by M. F. Hutchinson. (Blackie.) 4*d.* each.—We do not know if this is the writer's first work; if so, it is very good. There are perhaps some objections to the Play, but the Masque has great possibilities.

Modern English Literature. By Edmund Gosse. 1–420 pp. New and revised edition. (Heinemann.) 7*s.* 6*d.*—No one may underrate Mr. Gosse's critical work. The present revised edition with its unmatched portraits is a treasure—for anyone who knows his English literature. Many of the illustrations are so good that they are worthy of frames. The price is moderate for such a book.

Historical Plays from Shakspeare. By A. T. Quiller-Couch. 1–368 pp. (Edward Arnold.) 6*s.*—This work, which does not in any way compete with the too famous book by Lamb, is admirably done. If anything is needed to send a boy to Shakespeare (and often a good deal is needed) this book should do it. The virtue of the editor or compiler lies in this, that Shakespeare's own words meet us on every page, in every paragraph. The many illustrations are all from well-known paintings.

Geography.

Atlas of Commercial Geography. By R. Ferguson Savage. 36 plates. (Johnston.) 5*s.* net.—This is an atlas which has several good points. First, it is excellently got up and beautifully printed; secondly, it makes much of physical geography, and its series of physical and geological maps are most useful as well as attractive; thirdly, it prints a "same-scale" British Isles on every plate except the world maps; and, fourthly, it is up-to-date enough to include the Tashkend-Orenburg railway and the two new provinces of Canada. Why it stopped short at the recent Japanese-Sakhalin arrangement is mysterious. Its defects, however, are many and glaring. The author seems to imagine that an ordinary map becomes a "commercial" map when it is sprinkled over with a sufficiency of labels. But the general effect is often most misleading. There is, for instance, a great lack of proportion. Spain, according to Mr. Savage, in the plate "South and Central Europe," has just as many products on its arid plateau as on the marginal folds or the irrigated huertas of the coast!—that is to say, "animal and vegetable products": minerals have to be searched for on another map; presumably, there is no more room for labels. Again, cotton looks far more important in W. Africa than in Egypt, while palm oil in the same region appears of quite secondary importance. As a matter of fact, one of the main reasons why the cotton experiments of Sierra Leone and our other Guinea colonies do not fructify at the rate the experimenters would desire is that the native prefers his well-established and more lucrative trade of palm-oil gathering. There are many mistakes too, mostly of carelessness in the matter of proof-reading. But the results are confusing, to say the least of it. In one map the petroleum product of south-eastern Russia is correctly placed; in another it has gone altogether, and its place is usurped by "salt"; in a third it is there, but shifted south, well beyond the confines of Persia. This will, at all events, give the young inquirer "furiously to think." Here are some more "points" to beware of:—Venezuela produces "cocoa," but Ecuador "cacao"; France is still represented at the entrance to the Red Sea by Obock, for *its supplanter* Jibuti does not appear; the cotton of Ferghana, one of the main sources of future profit Orenburg-Tashkend railway, is not shown, thou supplies further south are there; the only product Lakes Ontario and Winnipeg is, of all things, "r Gold appears in British Guiana, but not in the righ the British fisheries have the type-labels of herri mackerel, &c., but not one of the great banks (exc the edge of the Dogger) is as much as hinted at. is, too, a great dearth of small sketch maps and just the things one requires in an Atlas of Cor Geography. To superimpose the railways of Euro ordinary political map of Europe is simply to cre fusion. What one looks for is a sketch map of, Orient Express route or of the Alpine tunnels. chaser of this atlas will do well, therefore, to "v references" occasionally.

Science and Technology.

An Introduction to Geology. By Dr. J. E. Marr viii+229 pp. (Cambridge University Press.) 3*s.* explanation of the scope and methods of geolo geologist of Dr. Marr's eminence is sure to c attention from all teachers of the subject. The b is illustrated by thirty-three illustrations, wh generally excellent in themselves, but too little inf is given about them. For instance, the scale sho been given in Figs. 28 and 29, for at present th has no means of forming an estimate of the actua the objects represented. Similarly, in Fig. 6, the description "a pot-hole" seems inadequate. The tion appears to be a reproduction of a pot-hole in at Glenariff, Co. Antrim, and this fact, or a preci ment of the locality, might have been supplied. Figs. 9 and 10 are insufficiently described. apparently represents glaciated rocks at Capel Carnarvonshire, and, if this surmise is correct, have been added to enable the reader to know seek the example given. In writing for beginners precision is desirable. It would have been better on p. 47, of "expansion" and "contraction" rat "lengthening" and "shortening," since cubical e is being considered. But these minor blemishes removed in the next edition. The teacher can re the volume with confidence.

(1) *Catalogue of Chemical Apparatus, Balan Graduated Instruments.* Fifth edition. 516 + (Gallenkamp.) 2*s.* (2) *Illustrated and Descripti logue of Scientific Apparatus: Hydrostatics and Pne Barometers.* 56 pp. (Griffin.) (3) *Illustrated C of Optical Instruments.* 36 pp. (Tamblyn-W (1) This handsome volume deals with general and scientific apparatus. In compiling it, Me Gallenkamp and Co., Ltd., have had in mind th requirements of the session 1905–6. A copy of t logue should be in the reference library of every and chemical laboratory, for the simplicity and cle its arrangement, together with the excellence of trations, will be of the greatest assistance to te making out orders for new materials. (2) We previous occasions commented favourably on c issued by Messrs. J. Griffin and Sons, Ltd., and th list of apparatus—to illustrate the teaching of hyc and pneumatics—maintains the reputation of t known house. (3) Teachers about to place order supply of microscopes, spectroscopes, or telescope consult Mr. T. M. F. Tamblyn-Watts's list. Th catalogue also contains some well-selected sets of a for the teaching of nature-study and magnet electricity.

Stage Physiography (Section I). By R. W. 256 pp. (Clive.) 2*s.*—This book is intended for candidates preparing for the Board of Educa- mination in First Stage Physiography (Section I). atment throughout is strictly elementary; but, in obtain sound and accurate exposition, the portions with different subjects have been written by ts under general editorship. The several chapters anics and on chemistry are satisfactory, but the nnot be said of the chapters on heat. On p. 117, an experimental method of showing the irregular n of water are given, and the method cannot work satisfactorily; the fact is quite overlooked cubical expansion of glass at temperatures near to equal to, or even greater than, that of water. On diagram is given of a piece of apparatus which, up as shown, would certainly end in disaster.

Miscellaneous.

nts of the Theory and Practice of Bookkeeping. Walmsley. xii.+252 pp. (Hodgson.) 3*s.* 6*d.*— ject of bookkeeping is not usually included in the m of secondary schools, and, when the great on the school time-table are considered, it is not see how its introduction could be effected. In the to this volume an earnest and well-argued plea orward on behalf of this subject, and, while we to endorse it completely, we would gladly see a al of the commercial arithmetic that bulks so n the text-books set aside in favour of a course on of the book before us. The exposition of the s and practice of bookkeeping given in the volume tice seems to us exceedingly clear, and goes far the claims of the subject for a place in the of youth. To those teachers who require a text- can heartily recommend Mr. Walmsley's book as meet their needs in a thoroughly satisfactory

ner of School Method. By T. F. G. Dexter and arlick. 1–300 pp. (Longmans.) 2*s.* 6*d.*—If the will not be offended, we may hint that this book t improvement on the time-honoured "Psychology choolroom." It is eminently practical. It has on discipline, method, reading, geography, nature- d other subjects. The chapters are full of matter thoroughly sensible. We should have liked a given over to the faults of the teacher, for the ults take up far too great a space. More space ve been devoted to stammering and its cure—it is in eight lines; and in the notes on reading the inadequately treated, considering its immense ce; two pages are considered enough for "the literature." But the book is full of suggestions; dull pages, and where the teacher does not agree it will set him thinking. And the price is only wn.

ducative Process. By W. C. Bagley. 1–358 pp. cmillan Co.) 5*s.*—This is a fine book, finely To begin with, it is clear as to the meaning of . It is the subject, knowledge, reaction or habit nctions in a child's after life so that society will profit (p. 60). And it appears that morality is One might suppose that morality is the aim of nd we believe the writer thinks it is. Yet he does e to blame Great Britain for neglecting its educa- ch an extent that it is behindhand in commercial trial supremacy. A little light is needed here. A good deal of the psychology in the book is physiology, and this is as it should be, for it really matters nothing at all that the teacher should be ignorant of theories of apperception if he knows that it is a good thing for children to wear loose clothes, to live in ventilated rooms, to use daily exercise, to keep clean *under the skin,* to avoid unclean talk and prurient meats, drinks, and literature, all of which are physiological matters mainly: if the teacher knows why it is a good thing and can tell his class and get his class to agree with him, happy is the school. The writer ends sadly, "In the light of what knowledge we now possess—and this is little enough—one is almost bound to adopt a pessimistic attitude toward the destiny of the race." A brief review, which cannot possibly do justice to this important volume, may perhaps do some teachers the service of sending them to the volume, if only that they may discover for themselves why the writer thinks that all around us is "a murky atmosphere of pessimism and doubt."

Oxford. Described by R. Peel and H. C. Minchin. With 100 illustrations in colours. 144 pp. (Methuen.) 6*s.* —For all who love Oxford, this book with its beautiful illustrations is a little treasure. No doubt, the memory of the grey walls and grey towers does not paint them in quite such vivid hues; but, with the exception of one picture (that of the Tower), the lights are such as may have been seen chiefly in autumn by any colour-loving and understanding eye. The letterpress is good, modern, chatty, and does not dig too deep into archæology.

The Education of Girls in Switzerland and Bavaria. By Isabel L. Rhys. 71 pp. (Blackie.) 1*s.* net.—This booklet is the report of the author's work as Gilchrist travelling student in 1902. It may be recommended cordially to students of education who are concerned with the methods of education adopted in girls' secondary schools in other countries. Mistresses in our high schools will find the essay suggestive and interesting.

Practical Housewifery. By C. F. Picton-Gadsden. viii.+191 pp. (Sonnenschein.) 2*s.* 6*d.*—We have in this volume numerous useful hints as to the best way of looking after a house. Cookery is not dealt with, and the information given is of the character of useful recipes for specific purposes. The book may be recommended as a handy work of reference in domestic difficulties.

What shall I tell the Children? By Dr. George V. Reichel. Second edition. xii.+224 pp. (Allenson.) 3*s.* 6*d.* —This collection of object-sermons, as the author calls them, should prove of assistance to schoolmasters called upon to occupy school pulpits. The idea of illustrating informal lessons on morality, and more formal discourses in the nature of a sermon, by objects, is worthy of attention. The fact that the book has reached a second edition proves its usefulness.

Boys and their Management in School. By H. Bompas Smith. viii.+119 pp. (Longmans.) 2*s.* 6*d.* net.—There is much advice from an experienced headmaster in this volume which should prove invaluable to young men fresh from the universities starting upon a career as schoolmasters. The teacher who has borne the heat and burden of the day will find little here which he has not discovered for himself. But there is a sweet reasonableness about Mr. Smith's style which will appeal to beginners touched with the pedagogic passion. We must, however, offer a protest against the author's constant use of the split infinitive; to say the least, it is very irritating.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

New Methods of Modern Language Teaching.

IT is not my intention to offer any general criticism of the article by Mr. G. H. Clarke in your last issue. It contains some wheat and some chaff; I have no leisure to perform the winnowing process, which a thoughtful reader can easily perform for himself. I pass over obvious inconsistencies, such as the inclusion among "reformers" of those who advocate "an amalgamation of the old and new methods," and wilful exaggerations, such as the statement that grammar is a "red rag to a new-methodist," and I propose to confine myself to the remarks about phonetics.

It seems to be a recognised means of attacking the efforts of the reformers to ascribe to all of them the vagaries of the extremist. I ask myself, Who desires that his pupils should "master the science of phonetics"? Surely no one who has given any study to the subject; for he must be aware how far he himself is from mastering it. Mr. Clarke recognises that a knowledge of phonetics is of great value to the teacher, but he adds that it is of little educational value to the schoolboy. It is a little difficult to follow Mr. Clarke. In what does its value to the teacher consist, if he does not utilise it in his dealings with the schoolboy? And if it helps the teacher to enable his pupil to produce the foreign sounds correctly, is it, then, of little value to the schoolboy? Mr. Clarke says that "owing to lack of ear, it is as much waste of time to explain phonetics to some boys as it is to try to teach certain boys music and singing." I do not quite know what Mr. Clarke means by the expression "to explain phonetics." If he wishes to imply by the sentence quoted that some pupils have more difficulty than others in producing the foreign sounds, I agree with him; but I believe that, even with these, better results will be obtained if they are taught the difference between the sounds of the mother tongue and those of the foreign language in a systematic fashion than if the teacher relies entirely on imitation. This I hope to have made clear in the articles on the study of speech sounds which you, gentlemen, have asked me to write for THE SCHOOL WORLD, and I venture to refer to them those readers who are interested in phonetics.

I would conclude this letter by commenting on Mr. Clarke's statement that "Prussia seems to have turned against the use of phonetic symbols." I must confess that I am again not quite clear as to Mr. Clarke's meaning. If he is referring to the Prussian *Lehrpläne*, I do not know how he can justify his assertion. It is true that formerly the "Vermeidung von allgemeinen Aussprache-regeln" and the "Fernhaltung aller theoretischen Lautgesetze und der Lautschrift" were demanded; in the latest *Lehrpläne* (1901) these restrictions have been removed. The Prussian educational authorities no longer place difficulties in the way of teachers who wish to make use of phonetics; and I have not seen any evidence of a decline in the number of Prussian teachers who use the phonetic symbols in their classes.

It seems a pity that, in alluding to the regulations in force in Prussian schools, writers should still sometimes refer to the *Lehrpläne* of 1882 or 1891, instead of t into account the changes effected in 1901, which, i sections dealing with modern languages, show ext concessions to the demands of the reformers.

WALTER RIPPM

WITH reference to the article in THE SCHOOL WOI "New Methods of Modern Language Teaching," say, shortly, that it does not appear to me to tou root of the question. Only a superficial view could c at any rate, the *principles* of the new method with of the "old French courses." A principle is one a method—*i.e.*, the means used to work out a princi another. The principle of what is called the method" is sound and unassailable; the principle "old French courses" is thoroughly bad.

The results of these old courses (*vide* the reports Oxford local examinations in the same number c magazine) are, and always will be, pitiful. I spe as a theorist, but as a teacher, inspector, and ex Personally, I have always recognised the exagge and futilities to which the new principle, if mech and unintelligently applied, like every princi whatever subject, is liable. But this liabilit nothing to do with the question. On the same the Christian religion, with its various heresies, i condemned. The claim made by "old method" t that they can, at any rate, teach grammar, not to what they are pleased to call "literature," is abs is the very thing they have utterly failed to do, un teaching they mean the mechanical and unint memorising of undigested facts, reluctantly learnt, forgotten, and, in most cases, both intellectual practically useless. The future of modern language ing lies with the teachers—and headmasters. *Dis doceant.*

CHARLES COPLAND P

The Athenæum.

Un-uniformed Rifle Clubs.

I AM meditating the formation of an (un-uniform club at this school. I should be very glad if some readers would give me information and advice.

I should like advice on the range and rifle four suitable where there is no range marked out by circumstances as suitable, and I am inclined to ado form of service rifle in preference to a miniature rifle. But the points on which I most need help are

(1) The amount of time weekly required by ea to bring him up to a state of proper efficiency.

(2) The youngest age at which, with a service carbine, it is advisable to start training.

(3) The expense of starting and keeping up the c cluding the expenses of the instructor.

(4) The regulations which must be adopted to safety at the range, including the amount of sup required.

I should welcome answers either through your c or direct, but no doubt there are other headmaste have in mind a similar project to whom some put cussion would be helpful.

B. D. Tu

Loughborough Grammar School.

I GLADLY respond to the Editors' request for an to Mr. Turner's queries, based on our experienc the last three years we have had a school rifl without uniform, now affiliated to the N.R.A., u Morris tube range of 25 yards in the school play We use (*a*) for the elder boys the *ordinary servi*

ith Morris tube, (*b*) for the younger, *Martini* fitted in the same way. Replying to Mr. Turner's estions *seriatim* :—

fter the five or six hours' drill in the manual , we find that a quarter of an hour's practice a quite sufficient for each boy; enthusiasts practise ten.

luch depends on size; as a rule, boys begin at .

he initial expense was less than £20, including Morris tube range, two service rifles and two carbines from Government, and twenty D.P. for manual drill. The instructor costs 2s. 6d. r for supervision. Parents pay for this and for ition.

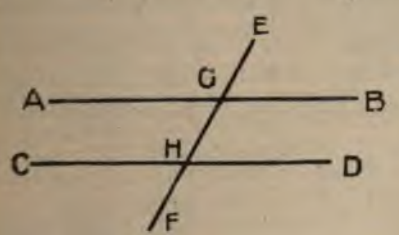
red flag is required by Government as a danger and a qualified instructor must always be in attend- the shooting. The range must be passed at the by the Government inspector, who also pays an visit.

WM. HAIGHTON CHAPPEL.

's School, Worcester.

Parallel Straight Lines.

following is a method of proving the theorem that aight line meet two other straight lines, making the e angles equal, then the lines are parallel, which I r easier to grasp than that given in Godfrey and 's "Elementary Geometry"; moreover, the theorem ing "corresponding angles" is proved simul- ly.



: $\angle AGH = \angle GHD$.

rove $AB \parallel$ to CD.

ose the part $BGHD$ to be cut out and then moved g the line EF, keeping GH on the line EF.

tually H will arrive at G.

since $\angle AGH = \angle EGB$, it is clear that HD will fall B, $\therefore \angle AGH = \angle GHD$.

e, since the direction of HD has not changed during tion, it follows that CD is parallel to AB. Q.E.D.

rtically opposite angles" are thus a particular case rnate angles when the parallel lines are coincident.

o.

ERNEST S. THOMAS.

THOMAS'S interesting proof is doubtless easier than but, unhappily, everything depends upon that ous word *direction*. We decided deliberately not to parallels as "straight lines in the same direction"; believe I am right in saying that experts regard the "direction" with great suspicion. Many charming can be given if only one is prepared to slur over that bscurity.

quite arguable that such precautions are needless, direction" proofs are easy and quite sound enough hoolboys, and that they could not understand the were it pointed out to them. Very likely this correct point of view, but it was necessary to pro- duce a text-book sound enough to reconcile academic critics to the revolution; and, after all, the schoolboy has come off pretty well in the change.

Osborne.

CHARLES GODFREY.

School Boarding-houses.

THE little paper on "School Boarding-houses" by "A Headmaster" in December, 1905, issue has interested us very much. Neither my husband nor myself was "bred to the business" of "keeping a healthy and economical hotel," but we seem to have succeeded in solving most of the intricacies thereof, with one important exception: we have not yet succeeded in earning a profit commensurate with the trouble involved in running our little boarding-house smoothly and comfortably. The commissariat department is under my control, and I, too, find that it is quite possible to feed boys at a sum under 10s. per head weekly, to the entire satisfaction of the boys' parents, and, I believe, of the boys themselves.

In our house there are twenty-five boys, whose fees average only £38 per head. At 10s. per head weekly (an outside figure, I admit) the food-bills alone are £475. Then must be taken into account the salary of the matron, the wages of the gardener (we are obliged to keep a gardener) and of five maidservants, making a total of £152. Add to this £80 for laundry, £60 for coal and gas, and £100 for breakages, wear and tear, and the hundred and one necessary incidentals always cropping up in a large household, and our total is brought up to £807, which, subtracted from the receipts, £950, leaves a balance of £83. Out of this and my husband's salary, which is, of course, not munificent, we have to keep house for the remaining fourteen weeks of the year, dress, pay the salary of the children's nurse, pay the doctor's bill, buy books, newspapers, stationery, stamps (no small item, this last), and save all we can for the children's education and our own old age. I think it is quite evident that all boarding-house masters do not deserve the epithets "avaricious," "unscrupulous," so ungenerously hurled at them by newspaper correspondents.

To go back to the beginning. What ought we to do to earn the substantial profit which seems to me to be the assistant master's sole inducement to "keep a juvenile hotel"? We cannot reconcile it with our consciences to dock the boarders of a meal a day (they have four) or to buy inferior meat and groceries; and to part with my excellent, but highly-paid, cook would simply precipitate us into a turmoil worse than that of a general election.

Where can I economise?

A PERPLEXED BOARDING-HOUSE MASTER'S WIFE.

Method of Teaching the Atomic Theory.

IN "Hints for Teachers from Examiners' Reports," in the December issue of THE SCHOOL WORLD, can be found the following:—"Comparatively few candidates have a clear conception of the arguments in favour of the atomic theory." In spite of the diseased state of the atoms, most teachers of chemistry would consider the atomic theory of such supreme importance that its introduction into an elementary course would be unquestioned. As a teacher of boys and girls who are not, on the average, more than sixteen years of age, I have often been much exercised in mind as to the best method of, and the best time for, bringing the atomic theory before them; and, even after the step has been taken, there still remains the further question: How much use are you going to make of the theory? Ostwald advises that "the forms of expression of the

atomic hypothesis [be used] as sparingly as ever the present usage of language will permit." The advice seems good, but somewhat difficult to follow.

I think there can be no doubt that teachers find the subject difficult to approach, and that boys and girls find it difficult to grasp. The usual way of attacking the subject is, shortly, as follows:—A number of experiments are performed to show that elements combine in fixed, constant proportions to produce compounds; *e.g.*, the composition of the oxide of magnesium, formed by burning magnesium in air, the composition of the oxides of tin, copper, iron, formed by oxidation of the metals with nitric acid, can be determined by the pupils, while the composition of water can also be determined with the aid of the teacher. These experiments will afford data from which the combining weights of the elements in question can be deduced.

As soon as the idea of a combining weight has been fixed, it should be pointed out that some compounds are produced by two elements entering into combination in the proportion of one combining weight of each element, others by two elements combining in the proportion of one combining weight of one element to two of another, others in the proportion two to three; all these cases could be illustrated from the experimental work. This would really give us the laws of constant and multiple proportions.

The atomic theory could now be introduced as a pictorial representation of these combinations. The easiest method to adopt is something of this sort: imagine that each element is composed of small packets (that all the packets of any one element are exactly alike), that the weight of each packet is the combining weight in grams; then, to obtain a compound, you require to take of these packets, from at least two elements, in the proportions one to one, one to two, two to three, as the case may be. These packets are the atoms. This seems to me, shortly, the best way of arriving at a notion of the theory.

Even when the theory has been approached in this way, and apparently thoroughly understood, there are many dangers.

It is most important that the hypothetical nature of the theory should be particularly impressed upon the minds of the children. Boys and girls have such a good imagination that in many cases they lose sight altogether of the fact that the atoms are not realities, and use the theory to "explain" chemical reactions in a way which is weird. On this account it always seems to me inadvisable to talk of two atoms of hydrogen combining with one of oxygen to give water; it is much better to speak always of two parts by weight of hydrogen combining with sixteen parts by weight of oxygen—to keep the weight aspect in the foreground, the atom in the background. It should always be kept in mind that the theory is only a crutch to help our lame understanding; other theories would "explain" the reactions just as well, but the atomic theory seems to us the easiest to use. The merely dogmatic use of the theory is always unjustifiable.

Even after a very clear exposition, the non-use of the theory by young boys and girls is excusable; all chemical reactions with which we are acquainted take place in the gross, yet the theory considers these reactions as taking place between particles so extremely minute that they cannot be appreciated by our senses—which is, to say the least, a little confusing.

Another difficulty which confronts the teacher is the text-book difficulty. Most elementary text-books treat the theory badly; in many of them it is made a scientific dogma. The statement is made that matter is composed of atoms, and, as a matter of course, no proof of this can be given; the pupil is asked to take something, which cann proved, "on faith."

I wonder, too, whether some of the very bad answ the recent examinations may not have been due difficulty in understanding the question?—sometim aminers do put the question very badly. A quest the atomic theory should, in my opinion, be a question, one which would show the examinee exact answer was expected. A discussion as to the best introducing the atomic theory into an elementary and the best method of doing so, might be of co siderable service to a number of teachers.

Bridgend. W. A. W

The Operation 7÷3.

Is the operation 7÷3 to be read "Seven div three" or "Three divided into seven"?

I venture to put forward the following propositio

(1) The former phrase is correct.

(2) The latter phrase is almost always used by entering public schools.

(3) The matter is important.

In the case of proposition (3) a proof will be expect

Set an average class, aged thirteen, this sum:—"A ball team of 15 have to pay altogether 17s. for tickets: what is the fare?" I shall be surprised i majority do not say 15/17 shillings.

I am prepared to make the assertion that the ma of our boys *do not understand the meaning of div* and that this is at the root of much of the deplorable in arithmetic which all our reformed methods seem to left untouched.

Is anything more likely to produce this state of t than the use of the expression "divided into"?

Just consider the confusion of mind engendered b concurrence of these two phrases:—

"Three divided into seven" (meaning 7÷3).

"Three divided into seven parts."

I honestly believe that I am not exaggerating, a make an appeal for the suppression of the noxious phr

Osborne. CHARLES GODFR

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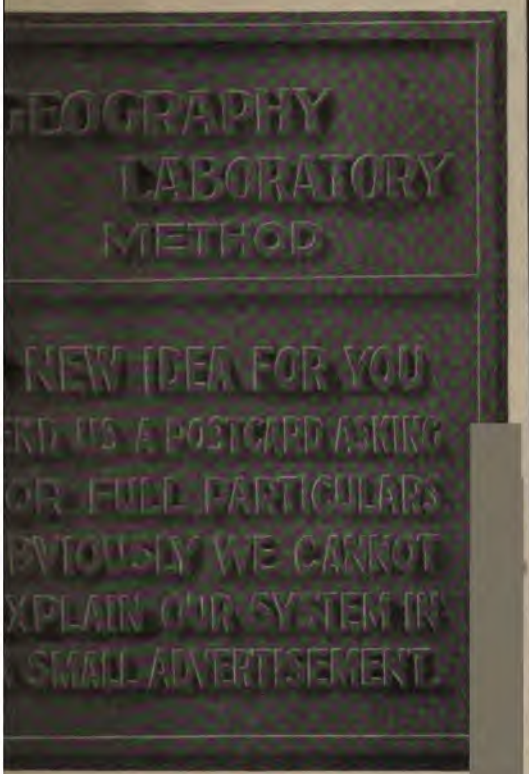

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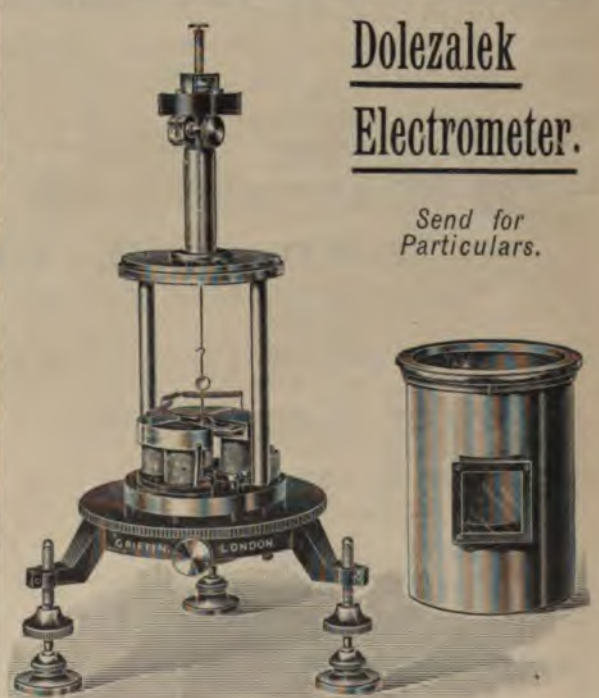

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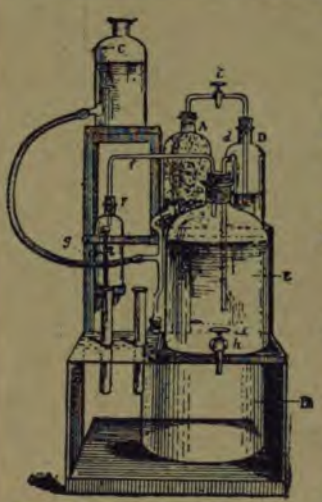

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THE

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A Monthly Magazine of Educational Work and Progress.

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MMING AS A PART OF THE NDARY-SCHOOL CURRICULUM.

By C. H. HEATH, M.A.

King Edward's School, Birmingham.

[the art of swimming is of advantage all boys and girls may in these days be ken as an axiom, and nearly all agree that is possible every boy and girl should swim. The facts that bathing and swim- e themselves beneficial to the healthy of the skin and body, and that the ex- taken conduces to a healthy moral tone and girl, are perhaps not so generally "Too much," says Dr. Stanley Hall, in book on "Adolescence,"[1] "can hardly in favour of cold baths and swimming ge. . . . Cold bathing . . quickens the of kidneys, lungs, and digestive ap- . . . It is the best of all gymnastics non-striated or involuntary muscles and heart and blood-vessels. . . . The moral plunging into cold and supporting the deep water is not inconsiderable in ening a spirit of hardihood and reducing derness to sensory discomforts. The ex- swimming is unique in that nearly all ements and combinations are such as are ed otherwise. . . . Its stimulus for heart gs is, by general consent of all writers subject, most wholesome and beneficial. thing so directly or quickly reduces to st point the plethora of sex organs."

weighty words emphasise two distinct ions, both germane to our subject, though ent ways. Dr. Hall's advocacy of the of swimming is all in favour of its ad- to the school curriculum; his advocacy of bath as distinct from warm points to the ge of open-air swimming over swimming ially heated baths: "the free swim in er is most invigorating." With this last will deal later. I may now assume that it ted that swimming is an art to be acquired ossible, not only for the pleasure it gives possible usefulness in the saving of life, of the swimmer or of others, but also for its healthy development of the body and production of good moral tone.

Though, within my personal knowledge, girls as well as boys have derived the greatest advantage from learning and practising swimming, my school experience has been entirely with the latter; but while I only quote the experience gained in boys' schools, I wish my arguments to be taken, where the conditions are possible, as applying with equal strength to girls, and as even more urgent in their case, as they have generally far fewer alternative opportunities of vigorous exercise.

First, with regard to treating swimming as a part of the school curriculum, may boys and girls be legitimately taught to swim during school hours?

Where gymnastics have been admitted into the curriculum, there seems no question of the legitimacy of the introduction of swimming, provided (1) that time can be found, and (2) that there are facilities. To meet the time difficulty, I should propose that in the summer term, if necessary or advisable, swimming should, at least to some extent, be substituted for gymnastics, say on two or three days in the week. Two occasions a week would probably be found sufficient, and at least two would be advisable, especially for beginners. The time allotted need not be long.

I know of one school where, with the bath five minutes distant, a period of forty minutes (thirty-five if at the end or beginning of school hours), allowing of twenty minutes clear in the water, is, or was, regularly allotted. The boys went in forms, with their form-master in attendance with a view to discipline, and a form organised from the point of view of attainments in Latin or other class-room subjects naturally contained swimmers of various degrees, ranging from the very beginner to, possibly, the best swimmer in the school. The instructor found time, in a not very large bath, and with classes of about twenty, to give some attention to all, and was able, in addition, to produce some very good diving. There was an advantage in such an unclassified arrangement, that the beginners were able to see others perform who had acquired some skill. Such a system may be recommended as likely to induce as many as possible of the

[1] Vol. i. p. 225.

pupils to take part in, and to gain benefit from, the lessons. The fee charged, if any, could in that case, I think, be merely nominal. In this school the meetings in school hours were the only occasions when the bath was open for regular use. I would, however, strongly recommend that, where it is possible, boys and girls should be encouraged to go to the bath on other occasions, when they could practise and enjoy swimming and diving under more leisurely conditions. Some looseness of discipline and horseplay may arise where classes of considerable size meet without other supervision than that of the instructor, whose whole energy and attention are required for his lessons and should not be distracted by the need of keeping order. It follows, therefore, that either (1) the instructor must be able to control a class without effort, or (2) the classes must be small enough to be handled easily, or (3) the order of the class must be provided for by other means—by the presence of a master or mistress, or by prefects, or by responsible officers of the school swimming club.

In another school—a large day-school in a provincial city—the conditions are quite different. It has no bath of its own, and uses the central corporation bath. Very few boys live in the immediate neighbourhood, and many come and go daily by train. The whole management lies with a sectional committee of the school club, consisting of both boys and masters, and attendance at the bath is purely voluntary. The section meets twice a week immediately after school in the summer term and at the beginning of the autumn term, the annual sports being held early in October, when the use of the bath is granted free of charge for an evening, in view of the large number of tickets taken by the club. These tickets are issued at a reduced charge of 3d., each boy buying from the swimming secretary. The services of a very competent instructor are secured, who, on one of the two evenings, in his small private bath, takes learners' classes (which also meet, when necessary, on another separate evening), and on the other gives instruction to swimmers. Any discipline required is mainly entrusted to the swimming captain, who, as well as the other good swimmers serving on the committee, is energetic in looking after the younger boys and improving swimmers. The section, since its revival, has now been living a very vigorous life for four years. The annual sports, which include a half-mile race in an open-air reservoir in a suburb, have always been a great success. A large number of boys take advantage of the opportunity of learning, and the school is producing an increasing number of keen and good swimmers. A "house" system exists now for all athletics, and the house races, in which three teams from each house take part, add zest to the competitions, and provide an incentive to improve to a large number of swimmers, many of whom will do for their house what they are not keen enough to do for their own advantage. Thus use is made of public spirit to improve the swimming, and, what is even better, of sv to increase public spirit and diminish p ing—the danger of all sport where ir prowess is aimed at.

A combination of the two methods above seems an ideal one; the inclusio lessons and meetings at the bath in scho makes it possible and easy for all who ar ally fit to take part; while the respons the boys themselves obtained by making ganisation, at any rate of all competitic of the school athletics does away with culties of discipline, and adds greatly to t ness of the work and the enjoyment of th

It will certainly increase the usefulnes training if competitions of some kind a duced to stimulate energy and interes right direction, which is the best means ing good order, and to focus the exer development of the faculty. The com may be more or less formal races, or ma partly in winning certificates for various d the certificates being either endorsed or if the time is improved subsequently. found these certificates produce excellent and the attempts, if properly supervis not lead to overstrain. Long-distanc should be discouraged in most cases f and in all for schoolgirls, the fact th tend to make a swimmer slow being a s and true, reason to assign. Swimmin water for any length of time is a great s the respiratory system, and should be aged; in moderation, however, it is train the eyes to see under water. D splendid training for the cultivation of st and equilibrium of the body, and "neat h are not only pretty to look at, but intere practise.

All schools which make swimming subject should provide instruction and in the methods of saving and restoring li Royal Humane Society has for many year medals to certain schools for annual cor in the methods of rescuing the drowning the resuscitation of the apparently drown dummies, one to float on the water and t weighted to lie on the bottom, are all th sary apparatus. Valuable information an ance can also be obtained from the Ro saving Society.

The questions remain, whether every s school should or should not possess a its own, what should be the nature bath, and what its cost might be. It b mitted that every boy and girl should swim, and that it is desirable to introdu ming as a subject into the school cc follows that every school should have a a bath. In most, if not all, of our larg good public baths are available, but, ev case of schools which have ready access there are obvious advantages in the p of baths of their own, the chief of w (a) the control by the school authorities

g of the water and the proper cleansing ath, which is by no means always satis- even in apparently well-managed city nts; (*b*) the avoidance of the danger of from outsiders using the same bath; and reedom of the bath for use whenever the ants it. The only disadvantage is one of making and of up-keep. It might a good plan in some cases for a few especially schools on a single foundation r a single management, to combine and a bath in common. Apart from the diffi- management, there would remain the drawing up a time-table to suit schools ight require to use the bath at the same Such difficulties would no doubt be over- cases where such a partnership was the ns of obtaining a bath.

mming-bath may, however, be of various om an expensive separate building with apparatus to a platform or shed on the a river, lake, or pond, or the sea-shore. natural facilities of the latter kind are , the matter of expense may be very The position chosen must be safe for s, *i.e.*, there must be shallow water currents, its limits being plainly marked, e deeper water of greater or less extent, out dangers, for good swimmers. Such places would be furnished with good oards. Many country schools, and cer- e ladies' college, as well as the University ng Club at Cambridge, possess them, London County Council and other City es provide them in their parks and other aces. Where such natural opportunities exist, an open-air bath with concrete provided with a dressing-shed, and pro- reened from public view, is an excellent e, and would be well placed on the school ere, if it were large enough and abun- n water were available, it might be freely er games. A specially constructed bath would, of course, be more expensive, and st possibly between £3,000 and £5,000. er in a closed building is cold, and heat- ratus would be required. The bath could ded over and used for other purposes— um or workshop—in the winter. With apparatus, the bath could be used all round, but this may be regarded as a A swimming-bath should, however, overheated, so as to produce slackness ue, or to induce remaining too long in r. On the other hand, all longer trials rally be made in fairly warm water to amp, and consequently will take place ar mid-summer where the water is not y heated.

indebted to various friends and public for particulars as to the cost of baths nt places. At one school the dimensions ath are 60ft. by 20ft., with a depth vary- 6ft. to 3ft. 6in. About 35,000 gallons erefore be required to fill it. Every week r is entirely changed once, and partially emptied and replaced on another day. For the last five years the average quantity used has been 608,000 gallons, at an average total cost for the summer term of £20 15s. (including two guineas for meter, and an extra charge of 25 per cent. for high service). In 1905 it was £17 12s. 9d. for 481,000 gallons. The cost per 1,000 gallons from the main varies in different places from, say, 6d. to 1s. 3d., 35,000 gallons costing from 17s. 6d. to £2 4s., on the assumption that about 250,000 gallons are taken in the quarter; the charge would be less or more according as the quantity taken exceeded or fell short of that amount. At Birmingham, unless special terms could be obtained, 608,000 gallons spread over two quarters would cost a little over £35, and 481,000 something over £30. At one of our large public schools, where over 400 use the bath daily, and can use it twice a day, the bath (70ft. by 26ft.) is filled, on the average, once a week at a cost of about £2 2s. 6d. To these charges must be added the cost of heating, and of the attendant or engineer.

All these figures are for water from the main; it must, however, be stated that such water, when supplied from open-air sources, *e.g.*, the Welsh water of Birmingham, is found to become discoloured very quickly in the sun's rays, and such water would never look clean in sunny weather; soft water, too, is very solvent, and becomes dirty much sooner than hard.

If water were obtained from a private well, I am advised that "the sinking of an artesian well and bore-hole may cost anything between £1,000 and £1,500, to which must be added from £1,000 to £1,200 for pumping machinery, steam boilers, &c."; and that "in respect to the up-keep, you cannot estimate at less (for water-supply and all) than £25 per month during the summer months."

To sum up—

(1) Every boy and girl who is physically fit should be able to swim well, and should be given an opportunity of learning.

(2) The subject of swimming may legitimately, and, where necessary, ought to, be introduced into the regular school curriculum.

(3) Swimming practice out of school hours should also be encouraged by competitions and certificates.

(4) The organisation of competitions and out-of-school swimming should belong to the school club.

(5) It is the duty of public authorities to provide clean, well-regulated swimming-baths for all classes of the community, and to give facilities for the use, at reduced rates, of their first-class baths to pupils of secondary schools.

(6) Where public baths are not accessible, every secondary school should possess a swimming-bath, or bathing-place, where swimming is regularly taught and practised. Where public baths are available, a school bath is not necessary, but is of great advantage.

THE LABORATORY ASSISTANT.

By G. F. DANIELL, B.Sc.
Mercers' School, London.

ALTHOUGH one finds frequent reference to the "laboratory assistant" or "laboratory steward" in recent school text-books, it is a matter of common knowledge that in many schools the necessity for such a person is not recognised. I use the word "necessity" advisedly, as twenty years of experience has convinced me that the work of a modern science department cannot be maintained permanently at a proper level by the unaided science-teacher. Further, the casual assistance of a few keen but inexperienced pupils, although highly beneficial to the pupils themselves, is inadequate for the fulfilment of the work to be done. What is this work? The requirements will differ not only with the character of the school (as is obvious), but also to a great extent with the individual methods of the teacher. But the following statement of what I regard as reasonable shows pretty fairly the work that the laboratory assistant should do.

HIS WORK.

His primary duty I take to be the stewardship of the fittings and apparatus. He should make, and periodically revise, a complete inventory of the apparatus—one copy for the master, and one for his own use. He should keep a breakage book, and enter all breakages or waste of chemicals; and the master should examine and countersign this, say, once a fortnight. There should always be a sufficient reserve of apparatus to meet accidents, and the assistant should inform the master about three weeks before the end of term what "re-fills" are wanted for next term. The cleaning of his own apparatus by the student is a vital part of the discipline of chemical study, but this is not a reason for dispensing with the services of a laboratory assistant—on the contrary. No judicious time-table could be constructed which would allow all the necessary cleaning in the laboratory to be performed by the boys, and beyond a limited amount such cleaning becomes mere bottle-washing, not particularly educative, and calculated to injure the scientific aims of the work. (I assume that the aim of our school science is to give a training, not technical, but both scientific and manual.) Moreover, the boys who are most benefited by such cleaning are the clumsy and untidy, and their reform is a step in that regeneration in minor moralities which a science-master esteems no insignificant part of his duty to the common weal. These boys will, of course, be the slowest, and as a matter of class-management one should set a standard below which no boy can fall without unpleasantness ensuing. Practically, this can be done by insisting that every boy or pair of boys should keep clean and tidy the cupboard, &c., and apparatus allotted to him or them, the laboratory assistant undertaking all the rest except scrubbing the floors. Material slovenl effectually banned, the master is bett cope with mental slovenliness—the conquest is the schoolmaster's hourl have dwelt on this point at some leng amateur in authority (perhaps a ch governors) might object to the appo an assistant on the ground that " capacity of doing things for themsel be injured."

In the holidays the benches will requ lantern-screens should have their su newed; all steel parts of apparatus rubbed bright and vaselined; all the ma diagrams, blinds, &c., seen to; retort-s other iron-ware blacked or painted; m tilled; labels renewed; small joinery jobs new lecture-apparatus constructed. T time for stock-taking, and for work account of occupying much space or ti impede the routine of term-time.

Senior boys who are engaged in vol gravimetric analysis should prepare standard solutions. But the ordinary s tions used by all the forms working tical chemistry should be made by the I find it convenient to write a list g simplest instructions for making up tw each. With the exception of a few critical reagents, this can be carried careful assistant without presupposi knowledge of chemistry. The remaini can be conveniently considered as p for classes scheduled as (*a*) practical (*b*) practical physics, (*c*) lecture.

For (*a*) there will be extra flasks, gla india-rubber connections, and extra ch be set out on the benches, and certain to be ready in reserve where opportu afforded for boys to devise their own pr which should be frequently the case. I I am opposed to "set-up" apparatus, unwise to make a rigid rule in this Occasionally a short demonstration required at the master's table.

For (*b*) with junior forms the prep similar to the above. For more advanc a copy of the course of practical phys be framed and hung in the laboratory. sponding list of apparatus required for periment should be drawn up with at minute details, and kept by the assist master merely writes the numbers of t ments against the names of the class. decided economy of teaching energy apparatus *duplicated* when it cannot be so as to supply all the class simult Thus, two pairs of boys can be taught and at the same time.)

With reference to (*c*) I am disposed from the practice copied from unive technical colleges. In my opinion, th should not aim at covering the subj studied, but be more modest both in m objective. The defect of laboratory wo disproportionate value is apt to be at

ıental detail, so that the main principles cured or even totally missed. The lectures in the first place, correct this defect by ling with the utmost clearness the funda- concepts and generalisations. In the place, they should supplement the labora- ork by demonstrations, which, by reason difficulty, risk, or expense, are less suited formance by boys. It is unnecessary to this article of the great variety of types ure useful occasionally but infrequently. his statement, my readers will perhaps without a shock that I am prepared to e lecture-assistance rather than laboratory- nce. If the laboratory assistant arranges er, well-worn experiments, and puts ready terials for new ones, the final setting-up justment of the latter forms an admirable for senior pupils who are specialising on nce side. It is true that this arrangement o try the patience and nerve of the science- and to consume more of his time than if the preparation himself, but the value of ining to the boy-demonstrators is great. wever the work of preparation be carried ere remains the clearing up afterwards, e setting up of diagrams, looking after nd oxygen or carbons for the lantern, &c., which naturally fall to the laboratory t.

in Government colleges and schools it is sed that experimental work necessitates petty-cash expenditure. The assistant have, say, 10s. advanced to him for this from time to time as required, and should account-book, to be countersigned by the

By cyclostyling and stencilling he can useful aid, and where the electric current e mains is available the assistant should and test accumulators.

above does not pretend to exhaust the r utilities of the laboratory assistant, but ter hopes that this incomplete statement lp those who are applying for assistance, ought not to be withheld where efficiency cted.

His Cost.

has to recognise the impossibility of laying dvice as to the position and remuneration laboratory assistant, except in general At the same time, it would be shirking f difficulty of my task not to offer some ions on this problem. My readers will y have realised that I have had in mind ssistant that ought to be—

responsible man, not a boy; giving most, ll, of his time.

man accustomed to method and to write *able to use tools;* a handy man.

man not above the work, *i.e.*, willing to he cleaning, brass-polishing, and washing- ired.

observant man, who will be interested in ents.

e said nothing about previous knowledge of chemistry and glass-working. These are desirable accomplishments, but sufficient of them can be acquired in a few months to make the man more useful than a boy of five times more theoretical knowledge. In eighteen months the man should be thoroughly competent for his particular duties, without becoming so accomplished as to be sought after for higher work. One admits that all scientific knowledge adds to an assistant's value, while glass-working is specially useful. But if our cloth be limited, we must consider what part of our coat can best be curtailed. My personal experience leads me to insist on the requirements stated above rather than on previous knowledge. I am of opinion that it is unwise to combine, or rather confuse, the position of junior science-master with that of laboratory assistant. From the Army, Marine, or Navy, the Reserve man with a good education certificate would be likely to suit at 20s. to 25s. per week. This suggestion is not for those who can afford to pay a skilled mechanic, but the latter's pay is often better than that of an assistant master.

The Sixteen-year-old Assistant.

A few years ago I made an inquiry as to the manner in which several schools in or near London dealt with this matter. In every case I received a courteous reply from either the head- or science-master, and I learnt that—

(*a*) several had no laboratory assistants, and all felt the want severely;

(*b*) a few had one or more youthful assistants—some quite satisfactory, some otherwise;

(*c*) three had men assistants, and considered them indispensable.

The pay given in class (*b*) varied from 5s. to 20s. per week. In one or two cases, boys in the school were paid a few shillings a week to wash up and help generally. This I consider a bad system, although special circumstances may have justified its adoption in a particular case. The unsatisfactory result in certain cases is at least a warning that the sixteen-year-old assistant is not always a blessing. Where the result with youthful assistants was most satisfactory, it had been the rule for them to earn promotion to considerably higher work before long, and the prospect of such promotion was the main inducement held out to fill vacancies. While writing this article, I received a letter from probably the best school adopting this system, asking me to recommend a youth "any age above sixteen, the pay to be 12s. 6d. rising to 20s. per week." But I think—perhaps wrongly—that a boy whose parents can afford to send him through a college course had better be so sent. For the clever poor lad with enthusiasm for science there are scholarships, and in large towns there is access to advanced classes at very moderate fees. In the country districts, conditions are far different, and, although not the best, the sixteen-year-old assistant in any case is far better than none, and exceptionally is very good. The drawback remains that, by the time he is thoroughly trained

and knows where everything is, he moves on. There are moreover drawbacks, of which schoolmasters scarcely need a reminder, to the employment of paid youths in a position to some extent supervisory over those of their own age.

Results.

It is perhaps worthy of mention that two of the schools sending replies belonged to the "great public schools." One had no laboratory assistant, and its pupils won no distinctions in science (this was in 1896); the other had two men assistants, and was easily first in England in respect of open scholarships and university successes in science. But it is for the truly higher purpose of promoting efficiency throughout the school, and in the middle forms particularly, with the moral as well as intellectual lifting of the standard of work, that I urge that the laboratory assistant is a necessity for the maintenance of a modern scientific department at a permanently high level.

SCHOLASTIC AGENCIES.

By Fred Charles, B.A.
Strand School, London.

Of the tenure of teachers, of their appointment and dismissal, much has been said; of the steps preliminary to appointment, there has been but little discussion, although there is some discontent. To be compelled to have recourse to an agency is considered by some an indignity, and to have to pay an agency a hardship.

The great public schools are in such close touch with the universities that they can without difficulty find the men they want, often from among their own old boys, often by the personal recommendation of heads or professors, almost always without resorting to either advertisement or agent. The head of a small school is in a very different position; neither his influence nor the offers he can make will attract, surely and at once, the nominees of university magnates. On the side of the teacher the conditions are similar; the high-honoursman may receive suitable offers, the blue may be so eagerly sought after that he requires no introduction, but the rank and file, the mere passmen, generally require a helping hand. The would-be teacher who has not been to Oxford or Cambridge is in a still worse plight; he has no means of ascertaining where to get a footing but by applying to an agency, the charges of which absorb an appreciable part of his first term's very modest salary. With what result? He probably finds himself strongly put forward for, and bustled into, a post for which he is but imperfectly fitted. The first consideration of the agent is to fill the posts, and it is conceivable that, rather than not fill a vacancy, he will recommend a man who will have to move on at the end of a term. Further, he is dependent on the headmaster for business in the future, so must satisfy his present needs by quietly m fixture if necessary. Hence he adopts ciple that the applicant once on the always on the books. The result is di his assistant felt by the head, and very discontent with his previously comforta felt by the assistant. These feelings qu act, on the assistant in absence of adva and on the head in impaired efficiency. rather than principles produced the pro competitors to these profit-earning agen charges of which are generally 5 per cen first year's salary, though one at least no to make "the very moderate charge o cent. on the first year's salary."

Existing bodies of teachers could, at nominal charge, bring together the he assistants among their members. The of Preceptors and the Teachers' Guild had agencies. The Assistant-masters' tion had not been in existence long l circulated among its members lists of v Out of these grew, in 1897, the Joint Ag Assistant-masters and the Joint Age Women Teachers. The College of P found a home for the one, the Teache for the other.

The former is under the manageme committee composed of representatives Headmasters' Conference, the Headmas sociation, the Assistant-masters' Associa College of Preceptors, the Teachers' G Welsh County Schools Association, the Schools Association, and other similar Its aim is to enable teachers to find work unnecessary expense, and the charges h fixed so as only to cover the cost of Upon obtaining appointments, member of the bodies represented on the comm charged 2 per cent. on the first year's on paying cash they are allowed a dis 20 per cent. Non-members are charg cent. Since advertisements, owing to th of papers in which they appear, and to t ness of the number of assistants who ta papers, fail to reach many of the men they are of most interest, the agency s lists of publicly advertised educational ments. For these lists a nominal charge and no commission is payable.

The sister agency has the same aim. committee are represented the Headmi and the Assistant-mistresses' Associati Teachers' Guild, the College of Precep Private Schools Association, and the County Schools Association. On obtain dent or non-resident posts, members o these bodies are charged 2½ and 2 per spectively on the first year's salary; non- 3½ and 3 per cent. respectively. At O University Appointments Committee Cambridge the University Scholastic A similar work at equally moderate charg university women-teachers, too, have a tive association, to which a registry—a

activity—is attached; the subscription and members did not until recently pay r commission on obtaining employment. encies are limited in range, and there- ever good their work, their usefulness l. Hence the joint agencies are taken entative of non-profit agencies.

agencies divide thus clearly into two comparisons are inevitable. Both are at their success is very largely—mainly, lependent on the personality of the must be a *persona grata* to both heads tants; he must possess the confidence of must intuitively recognise what each nd help him to get it. All have to vith the same difficulties, not the least t a large part of their work is done the post: testimonials, letters, even hs are often misleading; the wants of practice and on paper are not always More, perhaps, could be done than to meet this difficulty; an enterprising might earn the gratitude of his clients, them hours of letter-writing and dis- nt, by arranging, about the middle of , an afternoon assembly of heads want- tants, and assistants seeking posts—a irings "at home."

trast between the two classes of agency marked. Their objects are essentially that of the one is to earn profits by about appointments, that of the other bout appointments at the least possible eir work differs slightly; the non-profit have practically nothing to do with the hools or the introduction of pupils; this aps weaken their position with the nture schools, but has no effect on their o most public secondary schools. The contrast is seen in the cost to the as- The one charges 5 per cent. and allows nt, the other 2 per cent. and allows a of 20 per cent. for cash. This is how -earning agency earns its name. Its a post worth £200 a year is £10; its r's is £3 4s. If the latter is paid for done, the former gets a profit of on an outlay of £3 4s.—a profit o per cent. In comparing the manage- he different agencies—their promptness, of telegrams, the appearance of the nt out, the frequency of letters not necessary but suggestive of personal every allowance must be made, for one has to consider every penny spent, can be lavish and still earn handsome The above figures show clearly how professional bodies have saved the among their members by the establish- their agencies. That there are non- using the joint agencies, and assistants not even tried them, goes to prove engaged in secondary education, like gaged in higher, are "children in

From 5 per cent. to 2 per cent. is a big step which very little effort can complete; but why pay at all? The good plain cook, hardly rarer than the good teacher, does not pay even when using an agency! Is an agent necessary? The elementary teacher has not, and never has had, any use for him. He has the *Schoolmaster*. The clergy have the *Guardian*, and only occasionally make use of an agent. Other professions, then, are far less dependent on him than ours. Our main difficulty is the variety of educational papers in which vacancies are advertised. Some local authorities add to the confusion by advertising and, at the same time, communicating their vacancies to the agents. Posts vacant in schools under the London County Council are notified in the official *Gazette*, which might be more widely circulated than it is.

The agent, if he is to continue to exist, should be, so far as the assistant is concerned, no more than a press-cutting agency to collect notices of vacancies advertised and send them to his clients. For this he should be paid as the press-cutting agencies are—according to the number of notices sent. Governing bodies and heads might give him more responsible work; applications might be sent to him and, after being classified, forwarded to the advertiser; or he might be instructed to select a certain number of the best applicants and submit these only. For this he should be paid a recognised fee according to the work done. In no case should his charge depend on the salary attaching to the vacancy advertised or be contingent on its being filled.

The advertisements should either state full particulars or announce the vacancy and salary—with the name of the school—saying from whom particulars can be obtained; the former seems preferable, but if the latter were done the agent might well obtain the particulars and send them out to his clients. The advertisements or further information should be definite and transparently honest. (Even now it occasionally happens that at the last stage of the negotiations the applicant is told that he is one of several, and is then asked to accept less than the advertised salary!) The particulars should indicate clearly the status of the school, the commencing salary and scale of increments, the teaching hours per week, the minimum qualifications required, and perhaps the average number in the classes—"perhaps" because the importance of this has lately been somewhat overrated. Given suitable accommodation, the strain of teaching depends more upon the variety than upon the size of the class. A homogeneous class of forty means less strain than a class of thirty who, though they have done the same work, have done it with very varied results. Apart from its primary object, this publicity would bring many advantages in its train; parents would better recognise the type of school to which their children were going and the class of teacher there; such incongruities as £30 a year at a "college" with many high-sounding titles, under the headship of a "B.A., M.M.L.A.Lon.,

R.T.C.B.Lon., R.F.C.," would of necessity disappear.

In the future, personal recommendation will be more general than now; training-college courses will make teachers better known to one another; governors, well satisfied with assistants from one college, will send there when in want of other assistants. Schools in which the practical work of the training colleges is done will probably find all their teachers from among those who have practised there. The heads and staffs of the training institutions will become powerful factors in the staffing of the schools. Later still, when head teachers, no long headmasters, have all been trained, these influences will be more powerful, for heads will favour the appointment of assistants from their own old colleges. The training colleges could doubtless give valuable information as to how these factors have operated among elementary teachers, but in making comparison and drawing inferences from their experience it must be remembered that with them the demand is greater than the supply.

But the stage of advertisements in the public press is not the ideal state. That will not be reached until there is one, and only one, association to which all teachers, heads and assistants, belong—an association with a weekly paper and with a habitation of its own. In its paper classified lists of vacancies will be inserted at a nominal cost; the constant use of its habitation will bring together men who can work together; in its deliberations will appear intellectual leaders of the profession; in its management will be brought to light the organising genius among its members. With such an association selection will be easy, and the best men cannot but come to the top.

A SYLLABUS IN GEOGRAPHY.

By GEORGE W. STONE, M.A.

Principal of the Salford Municipal Secondary School for Girls and Pupil Teachers' Centre.

THE divisions of the syllabus which follows have been determined by the special circumstances of this school, which consists of a secondary school of about 370 pupils, with a pupil-teachers' centre as its "top," the centre containing about 200 pupil-teachers.

The syllabus, therefore, comprises, in addition to the preliminary instruction, a course for six years. By rearrangement, it may be grouped into fewer divisions, so as to coincide with the more usual four-year course of an ordinary secondary school.

The geography "regulations" of the Board of Education are by no means rigid: if one school has a longer course than another, the work can be done in greater detail, and in a more comprehensive way. The important principle which seems to underlie the regulations is that the subject shall be taught in the best method, and that its parts shall be arranged in the causal order, not merely that any exactly *amount* of geographical information given. The extent of the information g naturally dependent upon the time which disposal of the teacher and pupils.

The preparatory course is an extensio "preliminary instruction" section of the regulations. Leading from home geogr the various land forms and the forces upon them, the teacher proceeds to give general view of the world, and the notions of its relief, its river basins, divisions, and the largest towns. As n preliminaries to any real understanding o and rainfall, simple yet definite ideas are about the causes of winds, the mear evaporation and condensation, and the g vailing winds of the world. The impor large "snow-areas" in keeping up the p water supply of many rivers may be ill from nearly every continent.

If pupils commence the first-year cour out the stated preliminary instruction, i found necessary to include it as opportuni in the various "years" of the school. account for a certain repetition in the It is also intended that the older pupil gain fuller knowledge of the subject-mat reason out the connections between the physical causes and their effects upon the of the earth with which the class is deali

In each year's course a large proportio time is devoted to the study of general ge the special details of political geograph allowed less time than is usual. The features of Europe, for example, occu than half of the second year's cours makes it possible to treat with fulness t of the continent as a whole, the rivers, that a detailed knowledge of the physical of each country may be shown in connect those of surrounding countries. This proves in the end a saving of time, a a more accurate notion of the physical ge of each country. For example, the mi Europe are taught so as to show those the *continent* producing the various k mineral wealth, instead of dealing with th under the separate *countries*. The rich producing districts are independent of boundaries, *e.g.*, the great coal belt s from the north-west of France to the ea Rhine. The aim in the arrangement of labus has been to take in order physi ditions as causes leading up to other co physical and political, and thus indi causal links which connect all geographic

SYLLABUS IN GEOGRAPHY.

Sketch Maps: Should be drawn every week not as maps of fine finish, but as sufficiently expressions of geographical facts. Answers illustrated by sketch maps.

Preparatory Class.—Models of the valleys of and Mersey, and of the Wirral peninsula. A vis

h Clough, to illustrate valley and hill formation. ty of heights and rocks of the Kersal side and llebury side of the Irwell valley. The *various land*) found in home geography, and (*b*) illustrated in sh Isles.

of Climatic Forces on Land Forms.—Action of land. Weathering. Effects of rivers and glaciers. ious stages of river formation. Lacustrine and deltas. Hill formation. Floods. The work done ir modifying the earth's surface.

of the Land on Sea Forms.—Destroying and build- amples from the British Isles.

tains.—Varieties of forms. Ranges. Groups. The general direction of the great world range. ious parts. Comparative heights. Africa and . Their coastal position. Terraces.

ux.—Their correspondence with the direction of the nge. Secondary ranges as buttresses of the great The plateaux as desert regions. The position of t areas of depression, and their parallelism with ntain systems. The proximity of the lowest and vated parts of the earth's surface.

ocs.—Subterranean forces. Formation of vol- Their characteristic form. Extinct volcanoes. ruptions. Earthquakes. Geysers. The positions nes on the globe. The great volcanic circuits. cts produced by volcanoes, *e.g.*, the rising and of lands.

Atmosphere.—Its composition. Pressure of air. er and thermometer treated very simply.

—The climatic zones. Trade winds. Monsoons. ion. Clouds. Rain. Snow. The prevailing the world. Constant or variable with seasons. eral distribution of rainfall. Its dependence on tain system.

ontinents.—In each continent the political divisions ns should be taught in intimate connection with conditions.

America.—Revision of mountains, plains, and The division of the continental river basins. The rtings traced. The main political divisions. The portant towns.

America.—The mountains, plains, and valleys. ght of land. The great northern and southern The western slopes. The western plateau, and its The great lakes. The main river basins. divisions. Towns.

America.—Its mountain system. Isthmus. The Canal. Rivers. Towns.

—Mountains, plateaux, and valleys revised. Rain- e river basins. Water partings traced. The lake The Nile. The chief divisions of European in- The chief towns.

ia.—The relief revised. Rainfall. The scarcity rivers. Causes of drought. River basins. Towns. —The relief revised. The prevailing winds. Rain- er basins. Political divisions. Chief towns.

—The relief revised. Prevailing winds. The eam. Rainfall. River basins. The countries of

ghout the following courses, the physical geo- s to be taught in sufficient detail, and in all cases -connection between the various points of physical y is to be shown. The political facts are to be s resulting from physical conditions.

Year's Course: First Term.—*The British Isles.* n. The seas surrounding. Sectional maps of he relief of the land. Water partings. Rivers. Lakes. Plains. The coasts, as connected with mountains, hills, plains, and rivers.

Physical Geography.—Winds and rainfall. Causes of winds. Climatic zones. Trade winds. Prevalent winds of the British Isles. Evaporation. Clouds. Rainfall of British Isles.

Second Term.—Mineral wealth. The soil of the different parts of the British Isles. The most fertile parts. Vegetable productions. How affected by climatic considerations and nature of soil. The industries. Manufactures of cotton. Iron. Woollen goods. Glass, &c. Great industrial centres.

Physical Geography.—Causes affecting climate. The climatic divisions of the British Isles. Latitude and longitude.

Third Term.—The division of the British Isles into counties. The most important towns. Land routes. Sea routes. Commercial relations with other countries. Imports and exports. The broad facts of the economic geography of the British Isles.

Second Year's Course: First Term.—Geography of Europe. A general view of Eurasia. The great mountain range and the northern and southern slopes. The *striking* similarities and contrasts between Europe and Asia. The relief of Europe. Lakes. Rivers. Land routes. How they coincide with the courses of rivers. The coast, as connected with mountain ranges. Plateaux and low plains. Good harbours. Sea routes. The chief islands of Europe. Climate in detail. Effects of westerly winds and Atlantic drift. Rainfall.

Physical Geography.—Ocean currents.

Second Term.—Soil. Mineral wealth, and its distribution in detail. Vegetable productions. Animals. Races. Manufactures. Inter-European commerce. France, Switzerland, Germany, and Austria in such detail as time will allow.

Physical Geography.—Phases of the moon. Tides.

Third Term.—The rest of the countries in such detail as time will allow. Spain. Balkan Peninsula. Italy. Holland. Belgium. Denmark. Scandinavia. Russia.

Third Year's Course: First Term.—Geography of Asia. The great central plateau and mountain walls. Other mountain ranges. Seaward slopes. River basins. Lakes. Comparison and contrast with Europe. Coast of Asia. Islands. The prevalent winds of Asia. Ocean currents affecting Asia. Climatic divisions. Rainfall. Soil and characteristic products. Animals.

Second Term.—Mineral wealth and its distribution in detail. The races of Asia. The commercial productions. Density of population. Religions and industries. Chief roads and railways. Sea routes. Commerce. A more detailed study of the geography of the British possessions in Asia.

Third Term.—The political divisions of Asia. The chief towns. A more detailed account of the geography of Japan, the Chinese Empire, Russian Central Asia, and Afghanistan. European political interests in Asia.

Fourth Year's Course: First Term.—*The Geography of Africa.*—The relief of Africa. Contrast with Eurasia. The lakes and rivers of Africa. The coast. Reasons why the continent remained so long unexplored. Outlines of the history of settlement and exploration.

Physical Geography.—The great oceans of the world, showing briefly their relation with the great water partings. Finding position at sea.

Second Term.—The prevalent winds of Africa and ocean currents. The rainfall. The lakes as reservoirs. The climatic divisions of Africa. Soil and minerals. Products.

The races of Africa. The geography of Egypt, and the Barbary States in greater detail.

Third Term. *The Sahara. The Soudan. British Africa. German and French possessions in Africa.*

First Year Pupil-Teachers: First Term. *The Geography of America. Relief. Lakes. Rivers. Coasts and harbours. Prevalent winds and ocean currents affecting climate of America. Climatic divisions. Rainfall. Soil and minerals. Animals. The political and economic geography of Central and South America.*

Physical Geography. Revision of latitude and longitude. Finding position at sea. Map projection.

Second Term. *The political and economic geography of North America.*

Physical Geography. Winds.

Third Term. *The geography of Australasia, physical, political, and economic.*

Physical Geography. Ocean currents.

Second Year Pupil-Teachers: First Term.—*The geography of the British Isles (see first year's course). Revise geography of Asia.*

Physical Geography. Tides. Climate.

Second Term. *The geography of Europe (see second year's course). Revise geography of Africa.*

Third Term. *Revision of the geography of the British Empire, including historical geography.*

THE STUDY OF SPEECH SOUNDS.

By Prof. WALTER KIRSMANN, M.A.

III.

(*Concluded from p. 54.*)

THERE are many difficulties confronting a child when it begins the study of a foreign language; one of the greatest is the pronunciation. It is not merely that new sounds have to be learnt, differing slightly or entirely from those in the mother tongue; the manner in which sounds are represented is also different. The sound written *sh* in English is written *ch* in French and *sch* in German; the letters *eu* have a different value in each of these three languages. Just as the English spelling is an obstacle to the appreciation of English sounds, so the French and, to a less degree, the German spelling must be regarded as a difficulty in the way of the beginner.

It may be urged that for most pupils a reading knowledge suffices, and that if they should come to need a conversational knowledge they could soon acquire the pronunciation by a stay in the foreign country.

Boys and girls are sent abroad in order that they may learn foreign languages. The result may sometimes be satisfactory; it is safe to say that in most cases they acquire fluency at the expense of accuracy, particularly in matters of pronunciation. They hear the foreign language constantly, yet by lack of suitable training they continue to speak the foreign sounds with an "English accent." It is the learner who has at early acquired some knowledge of the foreign speech-sounds and a fair vocabulary that derives most benefit from a stay abroad.

It is a dangerous thing to disregard the pronunciation in the belief that it can be learnt. It would be safe, if it were possible for th to acquire a reading knowledge without p ing the words; but if we do not supply th sounds, the pupil will still attach *some* to the words, and these are sure to b entirely incorrect. The pupil will utter th language with what we call an "English —that is, he will retain his old habits o perhaps with a few slight modifications. ally there arises in his mind a powerful tion between the foreign word and its "E pronunciation; and unfortunate indeed is h duty it becomes to destroy this associa the laborious work of training the pupil nounce correctly. He has to teach the use pure vowels where the pupil has been diphthongs (as in *rose*, *même*, *Rose*, *Sch* has to substitute a new stress for the fa one (as in *commencer*, *répondre*, strongly on the second syllable); he has to teach nunciation of *r* (as in *mère*, *partir*, *mi* his task is heartrending.

Perhaps the idea that French might nounced with English sounds is not unc with the customary pronunciation of L used to be the rule (and it is still t mon) to begin Latin before French, an thus unconsciously acquired the impress foreign languages had the same pron as English. To one phonetically trai ordinary pronunciation of Latin is quite it seems so needlessly ugly and so utterly Almost every vowel suffers in quality, a in quantity too, and some of the consona as badly. It is earnestly to be desired efforts of the Classical Association to matters will meet with success; yet it feared that the day is still distant w classical colleagues will gladly recognise t of phonetics. Meanwhile they will contir enthusiastic praises of melodious verse they cannot read aloud!

But to return to modern languages: t more and more generally held is that the tion of the spoken as well as the written l is the best preparation for the study of th ture. It is argued that the beginner shoul a good command of a fair vocabulary of words and the essentials of grammar, a this can best be obtained by a copious us foreign language both in its spoken an written forms. It is not my object here t the reform method, which has been expo good deal of unintelligent criticism; I fident that the main contentions of the r are based on general principles not like assailed successfully. For my present pu is sufficient to state that those who b the reform method attach much import the spoken language, and that those wh it have to confess that in this respect at marks an advance on the old "gramm method.

If the foreign language is to be spoke

ıs to be self-evident that it should be as correctly as possible. How is this o be achieved?

ı long time it was thought that a foreign was alone able to teach the pronunciation language; yet it does not require much to arrive at the conclusion that the must have a knowledge of the sounds the pupil's mother-tongue and in the language. Imitation alone has been to be insufficient. Occasionally a pupil y himself and possessing unusual ability en taught by a clever teacher to pro- the foreign language well by imitating cher's speech; but this is rare. Particu- the case of languages like English and where the whole manner of speech is different, it is necessary for the teacher vell acquainted with the pupil's mother-

ı and again we see excellent foreign s of French and German whose pupils ıce the foreign languages in an obtrusively way. It is not that the teachers do not tention to the pronunciation; especially ıey are new to the work, they show great d perseverance in this respect. The at- of the pupils to imitate their pronuncia- not satisfy them; they feel that something g; but when the faulty pronunciation per- ıey come to the conclusion that English can get no nearer to the correct pro- ıon than this, and so they reluctantly themselves with what seem the best obtainable. It is quite possible that no esults can be obtained—by imitation.

different when the teacher, native or has taken pains to acquaint himself e phonetics of both languages. He is d for the mistakes which his pupils are ı make, and he forestalls them by suit- ercises. Anxious to prevent rather than he compares the English and the foreign and knows exactly on what he must lay stress. If his pupils come to him with d ears, he proceeds to give them the o discriminate sounds, which necessitates cquaintance with the organs of speech; his he is encouraged by the interest which ds never fail to arouse. The pupils have tering speech-sounds for a long time, yet knowing how they were uttered; and the ıt shed on such familiar processes is like ation. It is sometimes suggested that should not be bored with phonetics." the objection of the critic who attacks which he has no personal experience. n capable of boring his pupils with pho- s the man who bores them whatever he

A keen teacher of languages who has roduced phonetics into his teaching does ı it again. If you wish to have an opinion he value of phonetics to the teacher of or German, it is well not to go to one never made use of phonetics.

irst condition of success in teaching the pronunciation is the teacher's competence; the second is practice on the part of the pupils. As was pointed out in the first of these articles, they have been speaking English until certain habits of speech were formed. These habits have become firmly rooted by the time when the foreign language is begun. They are now called upon to acquire entirely fresh habits of speech; muscles have to be brought into active play which previously took little or no part in the production of speech sounds. This demands much practice. The time devoted to a foreign language is limited; during the rest of the day the old habits of speech prevail. It seems all the more necessary to give to the foreign language as much of the time allotted to it as is possible. This is one of the reasons why the reformers urge that the mother tongue should be used as little as possible in the foreign-language lesson. They maintain that to utter alternately the foreign language and the mother tongue renders it more difficult to acquire the fresh habits of speech than when the two are kept apart. Their contention seems a sound one.

The teacher who has studied phonetics is naturally anxious to utilise his knowledge in the classroom. He can do so by explaining the formation of the sounds; in all probability he will have recourse to the phonetic alphabet, which he has found so helpful in his own inquiries into the matter of pronunciation. Perhaps he will be content to use the signs when he is explaining the sounds, and for the purpose of drilling the organs of speech; he will find a printed sound-chart very useful. Perhaps he will go further, and let his pupils write in the phonetic transcription.

If he decides to do so, he must make up his mind whether he will teach the phonetic signs exclusively in the early stages, or concurrently with the ordinary spelling. In the case of German, no disadvantage arises from teaching both at the same time; in the case of French, the best results are likely to be obtained with English pupils if they use the phonetic transcript exclusively during the first term. After three months they will have acquired the fresh habits of speech. They can speak correctly, if not very fluently or about many subjects. It will still be necessary to practise the foreign sounds; even the foreigner's pronunciation of his language suffers if he speaks English much, yet in his case the habits of speech are much more firmly established than they can possibly be in the case of our pupils.

When the attention has for a term been devoted to the sounds, there is not much danger of the conventional spelling misleading the pupil; but is it not likely that the habit of representing the foreign sounds phonetically will interfere with the spelling? This seems a valid objection; yet experience shows it to be groundless. Indeed, pupils who have passed in a methodical fashion from the phonetic to the ordinary spelling are found to spell quite as well as those who learn the ordinary spelling only, if not better. After all, this is not surprising. They do not learn

the spelling in a hap-hazard way, but methodically; they realise the difference between the two systems of representing sounds, and when, for instance, they spell *ombre* and *tante*, they can supply a reason why there should be *m* and *n* in these words respectively—a point which hardly occurs to the pupil who has had no phonetic training. Similarly, the *ç* in *commençant*, the *qu* in *turque*, cease to be exceptions, and gain a fresh interest as illustrating the inadequacy of the ordinary spelling.

To those who wish to pursue the subject further, I would recommend Mr. Dumville's excellent "Elements of French Pronunciation and Diction" (Dent) and Prof. Viëtor's "German Pronunciation" (Reisland) and "Elements of Phonetics: English, French, and German" (Dent), my adaptation of his "Kleine Phonetik." As an introduction to the observation of the mother tongue I venture to call attention to a little volume entitled "Sounds of Spoken English" (Dent), which I have just written with an eye to the requirements of our training colleges.

I do not know whether these articles will have converted a single reader who started with a prejudice against the study of speech sounds, considering it a subject only for the faddist. There are, however, among the readers of The School World a large number of teachers who preserve an open mind and are willing to listen to the experience of others and to give a fair trial to what seems valuable in their suggestions. I am hopeful that my words may induce some students to devote their energies to phonetics. It is a science which owes much to Englishmen, but has for some time been neglected by them. The gain to be derived from the study of speech sounds is not inconsiderable. To establish a standard speech for the British Empire, and to enable every school-child to use that speech fluently beside its local dialect; to remove the great obstacle to intercourse with other nations, which our faulty pronunciation of their languages presents to us– these are objects requiring zeal and devotion for many a long year. Deep-seated prejudices must be overcome before success is attained; but the cause is worth the struggle. The teacher of languages has a great responsibility: introducing the child into the language and the literature of its mother tongue, he is teaching it to think clearly and to feel finely; helping the learner to understand a foreign language, he renders possible the just appreciation of the foreign people, which is a powerful aid towards an enlightened patriotism.

Bacon's Essays. By E. H. Blakeney. xiii.+373 pp. (Blackie.)—This is a handy little book, hardly larger than a pocket edition, supplied with a brief but good and readable introduction and some excellent notes. Editions of "Bacon's Essays" are numerous enough, but this has many merits and deserves attention.

MANUAL INSTRUCTION IN BC SECONDARY SCHOOLS.[1]

By W. A. Knight,
Sexey's Trade School, Bruton.

II.—Woodwork.

THE workshop should be well light utilising a room at the end of a b it is often possible to have light sides, and at the same time to prevent t of hammering, &c., from interfering wi lessons. A cheaper and better plan is to separate block, consisting of metal- an workshops placed end to end, a little from the main building. The style of arch can be more modest than that of the frontage, and several other small econor be introduced by the architect.

Each room should have a superficial about 600 sq. ft.—say 28ft. × 20ft. or 22 requirements by the Board of Educati

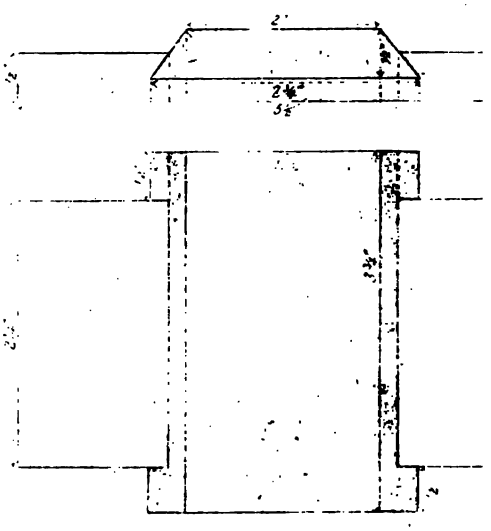

Fig. 1.—Joint No. 25.

minimum of 40 sq. ft. per pupil seems writer unnecessarily exacting. Most exp manual instructors would be satisfied sq. ft. in the case of woodwork. Roof-lig be used, but there must also be plenty near the bench-level.

Many types of woodwork benches are market, but these often lack *rigidity*, quite indispensable. A good and econom is to get long benches made locally, the be of beech or sycamore, the legs 4i strongly framed together. The maker w know where to put his hand on suitab which may have been lying by for years, which he has found no use. A benc 12ft. × 4ft. will accommodate six pupils, either side. Three of such benches car ranged very conveniently in a shop 28f

[1] The first article appeared in December, 1905.

If each bench accommodates eight
t will be 16ft. long, and the width of the
ıst then be increased to 20ft., or prefer-
t. A bench for eight pupils, complete
:s, which has been in constant use for ten
as made locally, and cost the writer £5.
drawer or shelf under the bench at each
·ves for storing work in process of com-
Elaborate arrangements for tools are
ıary. A strip of wood, 5in. by 1in., ar-
ound the walls, blocked out so as to leave
of 3¼in., allows the planes to be slipped
ehind. Part of the space between the
f the wall is covered over with wood, in
e slits for tenon-saws, chisels, and other
s, and holes for other tools. A set of
ept together, the number of the set corre-
with the number of the bench-place. It
asy to trace the author of any ill-usage
the tools have been subjected.

LIST OF TOOLS RECOMMENDED.

	s.	d.
lane	4	6
-saw	3	3
r		4
ıetre rule	1	6
·ule	1	0
... ...	1	3
ıl		3
ound file		9
4 chisels, 1in. to ¼in. ...	2	6
chisels, ⅜in. and 1in. ...	1	10
... ...	1	6
ıg-gauge		10
Total ...	19	6
Twenty sets, say £20	0	0

ɔn, for general use:

	£	s.	d.
ners at 1s. 2d.		7	0
es at 10d.		5	0
lanes at 6s.		12	0
ise-gauges at 2s. 3d. ...		9	0
ɔthing-planes at 3s. 6d. ...	1	1	0
ng-gauges at 1s. 3d. ...		2	6
eshaves at 1s. 6d.		3	0
ise-chisels at 9d.		4	6
ones at 2s. 9d.		5	6
·pots at 2s. 6d.		5	0
s and sets of bits at 24s. 6d.	2	9	0
nd 1 cross-cut saw		6	6
dstone, fitted, say	1	7	0
Total ...	£7	17	0

ply of brads, nails, screws, glue, sand-
:., will be required.
ɔr two shelves, with gas, should be
in a convenient place, for the glue.
ll blackboard can be placed flat against
, resting on a strip, and kept in place
ns.
ge cupboard is indispensable, at least

6ft. 6in. × 4ft. 6in. × 2ft. 6in., with shelves for storing joints and models, and with two or three large drawers with partitions for storing sundries.

A supply of wood for a year sufficient for two classes of twenty each would be as follows for the course suggested:—

500ft. run bass wood, 1½in. × 1¼in.
50 sq. ft. bass wood, 6in. × ⅞in.
500ft. run teak, 1½in. × 1¼in.
50 sq. ft. teak, 6in. × ⅞in.
300ft. run red deal, 1½in. × 1¼in.
300ft. run red deal, 2in. × 1½in.
500ft. run yellow deal, 1½in. × 1¼in.
500ft. run yellow deal, 2in. × 1½in.

A small quantity of Kauri pine, say 100 sq. ft., ⅝in. and ½in. thick, may be usefully added.

The total cost should not exceed £10 or £11.

A foot-lathe is a useful addition, and can often be purchased locally second-hand. It will serve for the more skilful pupils who are in advance of the others, and can be set to make (among other things) handles for the models in the metal-work course.

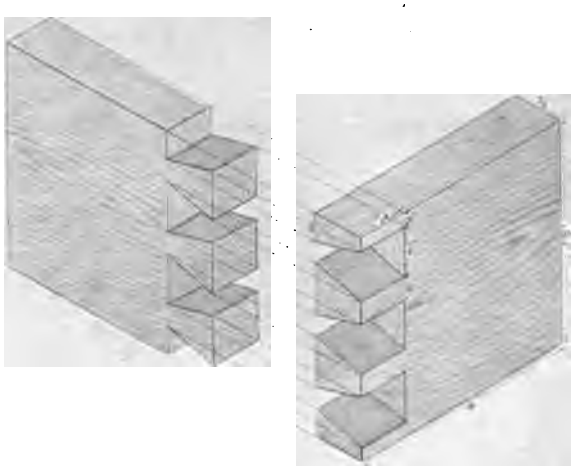

FIG. 2.—Joint No. 24.

The grindstone would be placed with advantage in the metal-workshop.

"Woodwork (English Sloyd)," by S. Barter (Whitaker), is an indispensable handbook for every teacher engaged in manual instruction.

SUGGESTED COURSE IN WOODWORK.

LIST OF EXERCISES, SHOWING ORDER OF JOINTS AND MODELS.

1. Use of English and French rules.
2. Planing first face (up to 1in. wide).
3. Planing second face and squaring.
4. Measuring, lining, scribing, and gauging.
5. Planing to sizes (up to 10in. × ½in. × ½in.).
6. Use of knife.

Model 1.—Flower-pot Stick.

7. Sawing across and with grain and at an angle with tenon-saw.
8. Planing to sizes 10in. × 2in. × 1in.
9. Use of paring chisel.

Joints 1 *to* 10.

10. Glue, use of.
11. Filing and glass-papering.

Model 2.—Vase Stand.

12. Boring with awl, nailing, and punching.
13. Use of smoothing-plane and shooting-board.

Joints 11 *to* 15 (to be glued and finished).

Model 3.—Flower-pot Stand.

14. Octagonal and curved planing.

Model 4.—Round Ruler.

15. Wide face planing.
16. Shooting end of grain.

Model 5.—Box (about 9in. × 5in. × 3in.).

17. Plugging and bevel planing.
18. Boring.

Model 6.—Flat Ruler (one bevel).

19. Counter sinking and screwing.

Model 7.—T-square.

20. Gouging.

Model 8.—Pen Tray.

21. Mortise gauging.
22. Use of mortise-chisel.

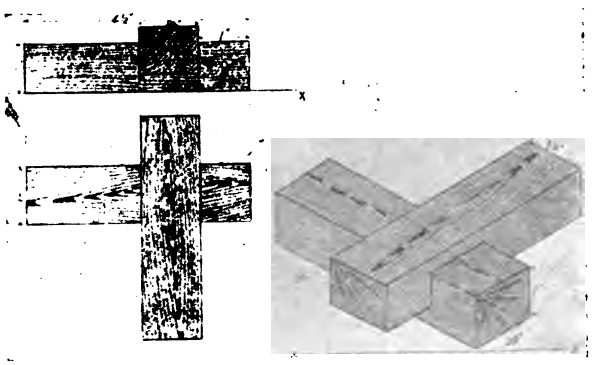

FIG. 3.—Joint No. 4.

Joints 16 *to* 22.

Model 9.—Footstool.

Model 10.—Try-square.

Joints 23 *to* 24.

Model 11.—Soap Box.

23. Oblique sawing and routing.

Joint 25.

Model 12.—Bracket.

24. Dowelling.

Model 13.—Test-tube Stand.

Joints 26 *to* 30.

25. Rebating, chamfering, and stop-chamfering.

Model 14.—Picture Frame.

26. Glue-jointing.
27. Pad-sawing.

Model 15.—Footstool.

Model 16.—Box and Lid (dovetailed).

Supplementary Models:—

Inlay; pen-tray; axe-shaft; lamp-stand; gauge; mitre-square; mallet; bootjack; letters formed of combined joints.

List of Joints.

1. Half-lap, open.
2. ,, middle.
3. ,, closed.
4. Notching.
5. Half-lap, dovetail.
6. Oblique half-lap, open.
7. ,, ,, middle.
8. ,, ,, with notch.
9. ,, ,, closed.
10. Cogging.
11. Tongue and grooving.
12. Housing and rebating.
13. Simple scarfing.
14. Bridle.
15. Stop bridle.
16. Mortise and tenon, open.
17. ,, ,, closed.
18. ,, ,, with haunch.
19. ,, ,, closed, with haunch.
20. ,, ,, with wedges.
21. Double mortise and tenon, open.
22. ,, ,, ,, closed.
23. Single edge dovetail.
24. Triple ,, ,,
25. Key grooving.
26. Lap dovetail.
27. Mitre dovetail.
28. Mortise mitre joint.
29. Scarfing joint.
30. Angle bridle.

N.B.—The illustrations accompany article are inserted merely as speci drawing actually done in class.

BOOKKEEPING AS A SCHOOL SI

By JOHN THORNTON.

II.

(*Concluded from p.* 49.)

IN the article already published the bookkeeping as a school subject v sidered, and it was urged, not onl ground of its usefulness in after-life, on that of its educational value, that be well if the subject were taught in al The important question remains: *How be taught?* For there is no doubt that be better to leave it alone altogether th the wrong way to work to teach it.

This question cannot be properly unless we clearly understand the distir tween office and school bookkeeping. T is the place to learn the theory; the ofl place to learn the practice. To attempt office bookkeeping at school is a fur error.

The school bookkeeping of a gener was vitiated by this error. A pattern " was cunningly devised, to be faithfully the pupil and " neatly ruled off in red in nearer the approach made to the averaj work in the average office, the better tl was supposed to be. To the theory and

ubject, as exhibited in the final statement
ts, little or no attention was paid. The
clerk would have nothing to do with
al results for the first ten or twenty years
reer, at all events, so why should the poor
y's head be troubled about them? In
school text-books the explanation of the
sheet and of the method of proving often
l less than a couple of pages of small
pparently having the remotest possible
on with the body of the work, which con-
f page after page of model day-book,
and ledger. Such brief and lifeless ex-
ns seemed to have been placed there more
's sake than anything else—very much
edication to King James is placed at the
g of our Bibles. True, they were occa-
glanced at by a yawning schoolboy, as
worshipper might try to relieve the
f a dull sermon by reading the address
Most High and Mighty Prince James, but
r case with the smallest idea of marking,
, and profiting by what he was reading.
y be thought that this is all changed, and
such old books are used now. I am sorry
his is only partially true. The fallacy still
o linger in the minds of some writers of
ks that the only object of teaching book-
is to train up a race of model clerks, and
ently the concession to modern ideas too
kes the form of what is supposed to be
us blend of theory and practice.
he truth is, that while school is far and
e best place for teaching the theory, the
the only possible place for effectively
the practice. For there are, in fact,
ds of systems, each one of which has
p with or been modified and adapted to
ial circumstances of the particular busi-
ncerned; and it is folly to attempt to in-
he schoolboy in any one of these systems,
e chances are 999 to 1 that in actual life
have to use something quite different.
t is no use making experiments with a
mixture of office and school bookkeeping.
tinction between the two is radical, and
but disappointment can result from the
to amalgamate them. The only true way
bookkeeping at school is *to depart as
s possible from office methods.*
nstance:—
ffice bookkeeping ends with the ledger.
bookkeeping begins with the ledger.
ffice bookkeeping treats of personal ac-
first. School bookkeeping treats of
accounts first.
ffice bookkeeping works onwards towards
account. School bookkeeping works back-
rom capital account.
ffice bookkeeping makes use of technical
nd abbreviations as much as possible.
bookkeeping avoids them as much as
.
ffice bookkeeping records long series of
tions lasting half a year or more. School bookkeeping is broken up into short series of transactions recorded and proved in half an hour or less.

(6) In office bookkeeping the final results are kept out of sight of the ordinary bookkeeper. In school bookkeeping the attention of the pupil is steadfastly and continuously directed thereto.

(7) The office bookkeeper can seldom stop to ask the reason for this or that, and there is no one but a crabbed old senior to answer him if he does. The schoolboy, on the other hand, is expected to understand the reason for everything, and to ask if he does not.

These distinctions are not accidental and trivial; they are essential and vital, for these reasons:—

(1) School bookkeeping begins with the ledger because the other books have nothing to do with the main principle. Indeed, so far as the theory of bookkeeping is concerned, they can be dispensed with altogether. This would be almost impossible in practice; but it is not only possible, it is highly advantageous in school, because it concentrates the mind of the learner on the thing that it is most needful for him to learn. To begin with the subsidiary books is unwise in all cases, as it gives an exaggerated idea of the importance of these books. And when the pupil's school studies are abruptly cut short before he has touched the heart of the subject, such initiatory work proves quite worthless. The principles of bookkeeping are not only not understood; they have not even been considered, and the mind has been clogged with special methods which will only by the merest chance coincide with those needed in after-life. The difference between the theory and practice of bookkeeping is like the difference between an actual game of chess and the explanation of the game to a beginner. You begin your game with a pawn; you begin your explanation with the king. Whatever books may be used, in any system of bookkeeping the ledger is the king of them all, and to begin to teach bookkeeping with the subordinate books because they are the first used in actual business is as stupid as it would be to begin to teach chess by showing your pupil the opening moves of an actual game and getting him to imitate them.

(2) School bookkeeping treats of nominal accounts first because these are the accounts that show the gains and losses arising out of the various business transactions for a definite period, and the effects such gains and losses have upon the capital invested in the business. Business is carried on for the sake of profit, and it will soon come to a standstill if the net result is not profit but loss. Nominal accounts are the pulse of the business—or, rather, the nurse's chart showing pulse fluctuations—and some knowledge of these accounts is an essential preliminary to a clear understanding of the other accounts.

(3) Office bookkeeping goes forwards. School bookkeeping goes backwards—that is to say, having first of all explained the balance-sheet, and shown how this statement of final results is the goal of the bookkeeper's labours, we then

proceed from this ascertained spot to the regions that lie nearest to it, and so work our way backwards (in explanation) from the known to the unknown, just as in the teaching of geography a plan of the school premises is frequently, and very wisely, taken as a starting-point.

(4) Office bookkeeping is full of technical terms and abbreviations; it positively revels in their obscurity and multiplicity. School bookkeeping never uses them if they can possibly be avoided, knowing that they both mystify and repel the learner, and also lead him astray from the matter in hand. And this is not at all to be wondered at. One or two long words even in a child's story-book are by no means resented, and may even impart a pleasant flavour to the dish (as Charles Kingsley and Lewis Carroll very well knew); but to see a page peppered all over with unfamiliar words and phrases is enough to daunt the stoutest heart, and unless the call of duty is clear or the prize very alluring we ordinary mortals shirk the conflict. Boys are human after all.

(5) Office bookkeeping records the transactions of one long period in one long series. This is inevitable. It would never do to balance and prove the books every week in order to discover how things were going on. It would be like the action of a child raking up the mould to see how the seeds in his garden were getting on. Nevertheless, it is a most important and interesting thing (both in gardening and bookkeeping) to know how things are getting on—and in school bookkeeping we disturb the soil as often as we please, to show the process and master the secret. Accordingly, we give very short exercises, so that we may see the six or twelve months' work of the office in focus. The long school exercises of the last generation were the bane of school bookkeeping and the main cause of the just disrepute into which it fell. There could be no sustained interest in such exercises; besides which, in not a few cases, the pupil left school long before he reached the goal of his labours, probably even before he came near enough to discern the goal through the mist and fog.

In modern school bookkeeping, on the other hand, the goal is close at hand; the player cannot but see it, and with quickened and sustained zeal he presses towards it.

(6) This goal—the culmination and fruit of all his toil—is hidden from the profane gaze of the ordinary office clerk. The books he has been laboriously keeping are on the appointed day conveyed reverently into the partner's private room. The doors are locked. The private ledgers are taken out of the private safe and, the results having been privately arrived at and entered, the books containing these results are carefully locked up again without the bookkeeper being invited to assist in this interesting operation. Consider the contrast in school bookkeeping. Here. the pupil's attention having been steadfastly directed to the balance-sheet and capital account from *the very* start and fixed thereon throughout, he reaps at last the satisfaction of seeing t solute agreement through his own pai care, and is rewarded by this clear proc accuracy of his own work.

(7) The last point of contrast betwe and school bookkeeping is the most defi significant of all. The office clerk has t his course steadfastly without stopping inquiries. It is no part of the duty of hi to explain to him the principles of bool generally, or even the principles of the system adopted in his own office. Pro understands that part of the special syste affects his own department, this is all th quired or expected of him. If he sh ambitious, he must help himself to knowledge of the subject as quietly and u tiously as he can. For it is by no means that if he were suspected of busying his m speculations as to the meaning or wi perfection of the system adopted in his would receive a peremptory hint to give undivided attention to his own dutie ditions the very reverse of these are the custom of school life. Here the master his advice and help, and eagerly welc telligent inquiry and thoughtful criticism

We have thus seen that office and sch keeping are totally distinct things, and attempt to combine the two would be lil to mix oil and water. They will not with the most prolonged and energetic School is the best possible place for tea principles and the worst possible place f ing the practice of the subject.

Let us suppose now that we have s in converting our sceptical schoolmas will perhaps ask us how best to intro subject into a school where it has ne taught, or what measures to take to rev its present teaching where that is seen sound; to whom we reply that he mus rate see to these things—a good text good teacher, sufficient time, and a litt encouragement.

Good text-books are the first essentia can be obtained with much less diffic formerly. But do not take the first that itself, and do not trust simply to recomm Obtain copies and examine them to see they meet the conditions already discus that they deal with principles mainly, th glance they attract rather than repel, they are written in fair and intelligible

Then secure a good teacher—one of manent staff if possible, but in any who is a good teacher—one who underst as well as he understands bookkeepin equally enthusiastic about both. Bear that a knowledge of accountancy withou ledge of boys is of no use whatever. other hand, let no one attempt to t subject who takes it up with scorn or or as a mere matter of duty.

e are the two chief essentials—a good and a good ship. Yet your vessel will ittle headway if you keep it in the shallows rrow creeks. Give it sea-room. Do not e that one lesson (of forty minutes) a week t preparation is sufficient. The least time ll give good results, in my opinion, is two a week, with suitable time for prepara- exercises, though one lesson a week will for diligent and earnest pupils if backed adequate out-of-school work.

he last place, give the subject honest en- ement. Do not forget it or slur it over. t omit to notice it on speech-day or prize- Do not speak of it with a covert smile, or it to be sneered at or treated as an idle ment good enough to fill up the time of poor fellows who have no brains for any- better. Let it take an honourable position y side with other subjects, and you will ly reap a due reward, if not in examination h is a secondary matter—at any rate in owledge that you have helped to give your better equipment for life's difficulties and luties.

E TRAINING OF TEACHERS IN SCOTLAND.

Proposed Radical Changes.

E Scotch Education Department has just issued for information and discussion a draft minute containing "Regulations for eliminary education, training, and certifi- of teachers for various grades of school." minute has for some time been under the eration of the provincial committees for the g of teachers, and it was the intention of epartment to submit these regulations to ment after consideration of the amendments sted by these bodies. As, however, incom- or misleading versions of the new regula- had found their way into the press, it was ered advisable to issue the whole minute blic discussion and criticism. It may be t once that, whatever the defects of the in matters of detail, a difficult problem en tackled in a courageous spirit and with prehensive conception. Boldness of initia- nd breadth of view characterise all the als, and their adoption will certainly lead creation of a teaching profession that in rship and professional equipment will rank he best.

regulations are necessarily somewhat in- , and appeal chiefly to the educational , but an admirable conspectus of their and aim is furnished for the general reader accompanying prefatory memorandum. this it is seen that the whole course of g is regarded as one continuous process two aspects—namely, the general educa- tion of the future teacher, and his professional training. Concentration is made upon the first in the earlier part of the course, and upon the second aspect in the latter, but in each stage the claims of these two sides of training are kept in view. It will be generally accepted that a liberal education is one of the chief qualifications for a teacher. Without this, no training and no natural aptitude can produce wholly satisfactory results. The acceptance of this principle necessarily involves the disappearance of the pupil-teacher system in its present form, and the Education Department deserves every credit for boldly accepting its logical consequences and abolishing juvenile labour from the schools. The Department might have sought refuge in the half-way house of the Board of Education with a two years' apprenticeship, but in acting as it has done it has chosen the better part. The pupil-teacher system at best was a mere makeshift, and was tolerated so long only because it was cheap. The attempt to combine academic training with professional training in the Falstaffian proportion of "a halfpennyworth of bread to an intolerable deal of sack" broke down years ago, at least in populous centres, where the pupil-teacher has become a half-timer —one half-day a learner, the other a teacher.

The standard of general education has risen so much in recent years that even this compromise has failed. The burden of the two trainings, academic and professional, has placed an intolerable strain upon pupil-teachers. They live in an atmosphere of perpetual rush and pressure, where true education cannot breathe. Education, if it is to be worthy of the name, demands a certain measure of leisurely progress. Pupils must have time to think, to assimilate knowledge properly, and not bolt it in undigested chunks as too many have to do now. That the results have generally been so good is a notable testimony to the ability of the teachers and to the capacity of the pupil-teachers; but in most cases success has been bought with a price. On the professional side, which is the supposed strong point of the system, the objections are even more pronounced. Youths begin to teach when they are just emerging from the primary stage of knowledge. They are given authority before the sense of responsibility has been awakened within them, and the result is too often hurtful to their own temper and character, as well as disastrous for the poor pupils who are the *corpus vile* for their callow experiments.

But if the pupil-teacher system as known to us is abolished, some of its most valuable features are to be retained. The pupil-teacher system certainly was an ideal method for eliminating the unfit at an age when they could profitably and without serious loss of time turn to other employments. Certain constitutional qualities and natural aptitudes are absolutely essential to the teacher. No study and no training can confer these if wholly lacking, though they can certainly be greatly improved by both. In the new regula-

tions, provision is made at each stage for the systematic observation of those personal qualities which make for or against particular fitness for the office of teacher, and at the later stages the test of actual contact with the problems of class-teaching has to be passed.

The minute further provides for the professional training of teachers in all grades of schools. For over sixty years this principle has been operative in the case of elementary-school teachers, and has completely justified itself by its results. Yet it is strange that no provision has ever been made or required for the teachers in secondary schools. The mere possession of knowledge was in their case supposed to confer the power to impart it, and training was regarded with a good deal of suspicion, if not contempt. This position has long been abandoned by most secondary-school teachers, but no organised system was available for their training. All this is remedied by the new minute, and the most ample provision is made for the professional training of the secondary-school teacher.

The reforms outlined above are too far-reaching and radical to escape destructive criticism, and already all the gargoyles of public opinion are beginning to spout. School boards are up in arms because the new regulations will add considerably to the cost of education by the substitution of trained teachers for pupil-teachers. A good deal of sympathy will be felt with this view, but, after all, this is only part of a great question which has recently been raised in regard to the readjustment of the relations between local and Imperial contributions. Such readjustment is absolutely essential in certain districts, or the whole educational fabric will come tumbling down; but if a satisfactory solution is to be reached, it can only be by taking up the whole question, and not by tinkering at a small fringe of it here and there.

A more serious, because more specious, objection is heard in many quarters. It is contended that the terms of the new minute will exclude the children of the working classes from the teaching profession. The avenues of promotion for those of limited means are not so numerous that one could look with indifference on the closing of a single one. Much of the best talent in this as in every other profession has been drawn from this class in the past, and it would be the height of folly to close the door on such in the future. No such objection, however, can fairly be taken against the regulations. By means of bursaries and maintenance allowance the most ample provision is made at each stage for this class of pupil. The regulations certainly contemplate the possibility of a certain number of students providing for their own maintenance. It is to be hoped an ever-increasing number will do so, for only in this way will the teaching profession take its proper place among the other professions.

The following summary gives the outstanding features of the new scheme:—

STAGES IN COURSE.

The recognised stages in the course of prepar the office of teacher are as follows:—

(1) Candidates on probation.
(2) Junior students.
(3) Students in full training.

CANDIDATES ON PROBATION.

(Twelve to Fifteen Years of Age.)

(1) Candidates on probation will be chosen fron pupils who have passed the qualifying examinatio examination corresponds generally to that of Standard VI.)

(2) The selection of candidates will be made headmaster's written report as to the character, and promise of each applicant.

(3) The course will generally extend over thre and must be passed in a higher-grade or hig school, or in an elementary school recognised as suitable facilities for higher education.

(4) Candidates will be under observation duri course in order to determine whether they do o possess the qualities necessary to a successful For this purpose, practice in teaching may b occasionally during the last three months of the co

(5) Candidates on probation shall be eligible fo on the same terms as the other pupils in the sc addition, a grant of £—[1] will be paid for each c who goes forward to the next stage of training.

(6) Probationary candidates may receive allowa travelling expenses or for maintenance away fro Candidates are not under any obligation to go fo the next stage of training, even though they have maintenance allowances.

JUNIOR STUDENTS.

(Fifteen to Seventeen or Eighteen Years of A

(1) Junior students must have completed a thr course in an approved secondary school, and have the intermediate certificate at the end of their ter standard of the intermediate certificate may be correspond generally with that of the medical preli

(2) Junior students will receive their instru secondary schools specially approved by the De for this purpose on the recommendation of s education committees.

(3) The course shall extend over two or three y the curriculum must include:—English, one for guage at least, mathematics, science, drawing, ma physical exercises, music.

(4) Systematic records will be kept of the work students in each subject, and these records will basis of the award of appropriate certificates at of the course. These certificates will be known certificates, and will have endorsed on them any obtained at the leaving certificate examination.

(5) A scheme for the systematic training of t student in the art of teaching each of the prima subjects must be drawn up for the Department's An instructor specially charged with the super this work will keep a record of each student's pro efficiency in teaching.

(6) Junior students will not be eligible for t

[1] The grants are not yet finally determined.

rants, but special grants for them at the rate of student will be paid out of Imperial sources.
intenance allowances may be granted to junior by the secondary education committees. These ees are to have the supervision of young teachers the probationary and junior studentship stage. er the supervision passes to the provincial com-

STUDENTS IN FULL TRAINING.

e course for students in full training must be of than two years' duration. It shall be open to all g (*a*) a junior certificate, (*b*) a leaving certificate months' practical training in an approved school, gree in arts or science of any university in the Kingdom.
e course shall be according to a curriculum by the Department, but every course must make satisfactory provision for the professional of elementary-school teachers. For this purpose, s may arrange with neighbouring school boards use of their schools as practising schools.
milar arrangements must be made with the s of secondary schools for those students who obtain recognition as teachers of higher subjects.
e instruction and training of those students who ssed the university preliminary examination, or its nt, may be arranged on the basis of a well-defined ars' curriculum, of which the university classes to shall constitute an integral part.
idents who have satisfactorily completed an course will receive a general certificate from the l committee. Such individuals will be regarded on *probation* for not less than two complete years. nd of that time they will be reported on by H.M. r, and, if approved, will receive their permanent ment") certificate.
rsons who desire to obtain recognition as secondary-achers must put in one year's probation in teach- subject in which recognition is claimed. There- a satisfactory report, a certificate will be issued, subject to withdrawal on the receipt of not less unsatisfactory reports.
intenance allowances, as in the earlier stages, but re liberal scale, may be granted to students in full Capitation grants for all students in training paid to the provincial committees on a scale some- nilar to that at present given to training-colleges.

TEACHERS OF SPECIAL SUBJECTS.

cates of qualification as teachers of special subjects, drawing, singing, cookery, manual work, &c., will ed by the Department to the holders of diplomas cognised institutions, provided the holder of the has in each case reached a certain standard of ducation (say that of the intermediate certificate or alent) before entering upon the diploma course.

Unseens. Junior, Book II., and Senior, Book II. by the Rev. S. E. Longland. 42 and 64 pp. ons.) 6*d.* and 8*d.*—A convenient selection of assages averaging some twenty lines in length. the extracts are in prose, but a few poems are hose in the Junior volume being almost too familiar purpose. The book is well printed; we have found ew slips: Senior, No. 41, l. 3, *sculptée*; No. 45, *e* (?), and l. 21, *verifiait*; No. 52, l. 8, *là*; No. 53, *ite* for *tout*; and Junior, No. 41, l. 6, *fougeuse*.

ALMOND OF LORETTO.[1]

IN his lifetime, Almond of Loretto received the compliment of both love and hate in no grudging measure. So much is to his credit; it is generally true that those whom all men speak well of are rather the mediocrities than the men who count. As we read this memoir, written by an old pupil and one who admired his master as a hero, we feel the same perplexity as the world felt. There is much to charm, something also to repel; there are marks of genius, and marks of faddishness; even tyranny and injustice. No merit can blind us to the fact that Almond was a tyrant to his assistants (we use the word in its ancient sense). He was often intolerant, and he must have been a great trial to live with, except for whole-hearted hero-worshippers. In a letter to the *Journal of Education*, which met with a crushing reply from Mr. T. E. Page, he laid down the doctrine that a master might be dismissed on suspicion as the lesser of two evils. He also treated his head boys as of more importance than his masters—a grave mistake. But we do not wish to dwell on this side of Almond's character. When he got his congenial staff he was able to inspire them with his own enthusiasm, and he did a good work in his generation.

As a professional man, however, he suffered from a limitation which is too serious to be ignored—he had little sympathy with the intellectual side of his calling. Books he apparently despised; not only bookishness and pedantry, where he would be in good company, but even books at their best he seems to have thought of small importance as compared with matters of dress and diet. His reaction against pedantry in dress, and his crusade against luxury and softness, have our heartiest sympathy; both are still needed, the latter more and more every year. But, as was natural in a reformer, he carried his crusade too far. In his views of intellectual training he went even beyond the average English schoolmaster, and that is saying a good deal. We speak not so much of explicit statements as of the whole tone of his life and work. Yet he had himself much shrewdness and even wit, with some enjoyment of fine literature. An Almondian crusade against false intellectual methods is now wanted as much as ever was his crusade against self-indulgence. He was strong on the moral side of school life, and undoubtedly did produce a manly and self-reliant type of boy; unfortunately this type, when unrefined by intellectual culture, tends towards the brutal.

The compilation of this book shows the faults of his own method. It is undistinguished in manner and lacks a coherent arrangement. There is a good deal of repetition in the letters: a selection of the best would have made a delightful chapter, or, better still, they might have been incorporated in the work as Nelson's are in

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[1] "Almond of Loretto: being the Life and a Selection from the Letters of Hely Hutchinson Almond." By R. J. Mackenzie x. + 408 pp. (Constable.) 12*s.* 6*d.* net.

Mahan's "Life of Nelson." For Almond could write a good letter: vivid and racy, as all his writings were, they have the directness of an intimate talk, and some, such as those written to his son, show a tactful reticence which one would hardly have expected. He is full of pithy sayings (some of which are also slangy), and we feel in every page that we are face to face with a personality. This book will increase Almond's reputation with the public which knew him only by name, and it has an interest for all who care about wholesome life, not only for Lorettonians.

THE CAMBRIDGE ENGLISH CLASSICS.[1]

A HEARTY welcome should be given to these volumes, printed in clear type on good paper, neatly bound, and sold at a moderate price. The series will do something to remove the reproach against Cambridge that it has lagged so far behind Oxford in attention to English literature. True, it will take long to catch up the Clarendon Press, with its admirable popular series of poets and its scholarly editions of Chaucer and Langland, its Berkeley, Dryden, and Lyly; but it will be no small glory to have produced a standard edition of Beaumont and Fletcher. For a standard edition this will be. The text is that of the second folio, exactly reprinted in every respect, except that obvious printer's errors are corrected, whilst in an appendix all variants are recorded which occur in any of the earlier editions. Thus, if we may assume the editor's faithfulness (and his name is a guarantee that care and trouble have not been spared), all the materials are given for criticising the text. We think a mistake has been made in not printing these variants at the foot of the page, which long experience has proved to be the most convenient arrangement for the student; we should also prefer, although here opinions may differ, to have had an eclectic text made after the custom of the editors of classical authors, or, at least, that the second folio should not have been followed where one of the earlier texts is demonstrably better as a whole. But the editor has chosen his principles deliberately, and there is much to be said for them. At least, we are grateful that he has not been eclectic in recording the various readings, but has given us the whole. Our readers will be aware that Mr. Glover died before he could publish his work, but we gather that it is practically ready for press, and the final supervision is in the competent hands of Mr. A. R. Waller. Crabbe's poems are reprinted in chronological order of publication. Errata have been corrected, the actual reading being given in the appendix, which also includes variants from the earlier editions. This volume includes a poem entitled "Midnight," for the first time published from a MS. in the posses: Prof. Dowden, and other unpublished poe: be given in the succeeding volumes.

Beaumont and Fletcher deserve to be re: only for their own sakes, but for their gr: portance in the history of the English sta: we had no Shakespeare, these would hav amongst our precious jewels; but, like n the earlier dramatists, they are to most E men no more than names. Yet their d: power was great. All through the seve: century they held their own on the stag even the wit of the Restoration could driv out. These are real acting plays, writ craftsmen who knew their business; th: acters are often real flesh and blood, the d brisk and natural, and there are scen: passages of great beauty in them. The suffers sometimes from the number of hype endings, but as a rule it is pleasing to spe to hear, and not seldom it shows the magi: of the poet. This volume contains the " Tragedy," " Philaster," " King and No " The Scornful Lady," and " The Custom Country."

Crabbe's merits as a story-teller hav eclipsed by the prosy character of his ver his subject, but he won the admiration of (no mean judge), and he has the virtues of ness and directness. Moreover, as pictu manners his pieces are of high value. T torical student must read Crabbe, the culture should not neglect him; his picture: are both interesting and amusing, and i becomes easy to forgive him his faults. S his verse-tales make useful reading in scho

[1] "Beaumont and Fletcher." Vol. i. Edited by Arnold Glover. lxii. +456 pp.
"Poems by George Crabbe." Vol. i. Edited by A. W. Ward. xiv.+ 542 pp.
Cambridge English Classics. (University Press.) 4s. 6d. net each.

THE EDUCATED MAN.[1]

IF I am asked to define an educated man, I sh that I mean by that term, a man whose intellect i to co-operate in the purpose of human progress fancy that, if you come to think about it, you that not much else than this, and not much less t is what you mean by an educated man. It is onl the same thing in other words, to say that an man is one who consciously and deliberately l intellectual ideal of what he himself and other capable of becoming, and who has in some mea knowledge and the skill to put this ideal into Thus you see, according to my definition, a n know how to read and write and do sums, and be educated. He may read the sporting news, write to the newspapers, but if he takes life as it, if he is content to live from hand to mouth in ness and his pleasure, if he is without an intellect consciously held and deliberately striven after for and for his kind, I do not call him educated. E means the holding and the striving after an in ideal. Or, in the higher region, a man may be a s with an acutely trained and perfected faculty, b has not a general ideal enabling him to give hi subject its place in human progress and human

[1] From an address delivered to the members of the Birmi Midland Institute by the Right Rev. Charles Gore, D.D., D. Bishop of Birmingham, President of the Institute.

remains a trained specialist rather than an an. Or, once more, a man may have ideas, but e so far from any right knowledge of what tory is, or what the world is, that he has no correlate his ideas with reality, and his ideas mæras. An educated man, I repeat, is a man lties are trained to co-operate in the law of

partments of knowledge or thought are necessary hat in any real sense can be called an educated t of all, an educated man must know something An Englishman must have some real idea of ountry of ours came to be what it is, of the h compose our British people, of the various rom without which have infused strength into nfluences and the struggles which have given nity, then liberty, then wealth, then empire. must have some standards of comparison. It gh that I should know, in some outlines of history of my own country. I must know, in how other races have in the past attained a sition in the world, and then for more or less causes have lost it. An educated man is a faculties are trained to co-operate in the law He must know, then, how in fact a man, or , has advanced to become what he is. But he also how men of other races have advanced in positions of pre-eminence and of power like and how in the past positions like that, once been lost, and by what causes. You perceive ? Progress is a precarious thing, a thing that co-operation with certain laws physical and educated man is one who can co-operate in of progress because he has some more or less as as to the way in which men in the past e great and have declined. Or, once again, ve certain ideas, more or less distinct, of the ds of civilisation which, in the past, have ing among men—of the chief civilisations, at He should look back and know that there once k race which brought into being a city life l intensity and brilliant intellectual distinction, hen the Greek cities sank under the domin- her men, that intellectual race survived and d, and by their language and the diffusion of ter and thought influenced the whole world. nother city, on the neighbouring peninsula, the e, from a city grew to be an empire, and gave deals of government and of law. And a man something of the civilisations which in much times reached their climax and decayed—he something of the splendid tragedy of Spanish And he should know something of what is n contemporary times in other countries, of quite recent history of Germany or France. man need not be a scholar. To get real and f human history of the kind that I have de- an need but read quite a few books if he reads s. And, what is more important, having read turns it over and over in his mind, revolves ls upon it, until he has got certain principles, n his mind, on which he can hang the variety ch from time to time come under his notice; m together as illustrations which gain distinc- rness in his mind, and guide his thoughts; so he knows something of the way in which men t, and something of the way in which, having eatness, they can lose it.

Then, also, an educated man must know something of modern scientific method and achievement. I shall speak quite briefly about this department of education, for fear of making too apparent my own deficiency. An educated man need not be a specialist, or even an adept, in any single branch of science; but a man cannot be—in any tolerable sense—educated unless he has got in his imagination and knowledge a more or less clear sense of what scientific inquiry has accomplished and is accomplishing. More than that, he must know with more or less definiteness what the method of science is; and that—I believe I am speaking the truth—he can only get by a systematic study of some one science, or, more imperfectly, but with some reality, from a careful study of some one or two really great scientific writers such as he can understand. The result of this kind of study to a man, who may be far short of anything that can be called a scientific man or an adept in science, is that the world, in his imagination, becomes the scene of great and constant forces which admit of being reverently explored, and so guided and directed, that they may be made to minister, to an almost indefinite extent, to human progress. You know, of course, Lord Verulam's great maxim—that sort of prophetic word by which he interprets so much that is greatest in modern scientific investigation—that "Nature can be controlled by being obeyed." That means that Nature is a scene of great and constant laws which will laugh at you if you seek to violate or ignore them, but which in proportion to the reverent study you give them can be guided or controlled to infinite possibilities of human convenience, advantage, and progress. Well, thus the imagination of the educated man is enriched and enlightened; and the effect of this kind of conception, if it once gets hold of a man—not only of his mind, but of his imagination—is enormous. It lifts a man altogether out of that practical acquiescence in things as they are which is so enervating. It fires his whole being, possesses his whole outlook, with the idea of knowledge yet to be won, power yet to be acquired, transformations yet to be made.

There is one other region of feeling, and that the vastest, on which I will say a word also. I think a man may be educated in history and educated in science and still lack something, vague but of extraordinary importance, without which a man can hardly claim to be called a really educated man. I think an educated man, by means of art, or music, or poetry, or by whatever means, must nourish in his soul a sense of the Eternal—a sense of that "which was, and is, and evermore shall be," lying beyond all the changes in human history and natural progress—"the Eternal not ourselves," in which we live and move and are, which is both beauty and power, righteousness and goodness. This transcendental emotion is not any definite creed; it is possible to the adherents of almost any conceivable creed: it is common to Herbert Spencer and Hegel, to Plato and Saint Paul: but without it a man is without something so essential to human worth that he can hardly be called educated. You know what it is, when you are worried, and occupied with the infinite details of life, and have the opportunity of listening to some great music, how slowly, if you can be quiet enough to surrender your spirit and lend a listening ear to the music, there steals upon your soul a sense of the eternal harmony—something greater than the discords and the details of the life in the midst of which we live. Or it may be that some single line of poetry, with its unspeakable truth, recalls you to the depths which lie in Nature. Or it may be by some work of art, only a little colour

and just the outline of some figures—a mother and a child —that, if you have got the quiet eye to look at it, there is smitten into your soul a sense of the eternal and fathomless beauty which there is in common things. Many are the channels by which to different minds sound and shape and colour and motion impart and deepen the sense of the Eternal.

I have selected three elements in education: those that appear to me most essential to make up the character and mind of an educated man—those without which—without, I would say, each of which—I do not think a man can really be called educated. They are possible for most of us; they might be possible for all. We may all acquire some real knowledge of history, some real knowledge in one particular branch or department of scientific method and attainment, some cultivation through music, through poetry, through art, through Nature, of the sense of the Eternal, interpreting man and Nature in eternal aspects. I have had in view the education possible to an ordinary man, not a professed student. A man to become educated need not have time to read much if he read the right books. I would say to those of you who are young: You will probably live seventy years or so. Well, it is quite well to be prepared to live much less; but plan your life as men who will live for seventy years. Plan your intellectual life so. You cannot hope to become educated unless you lay out, and from time to time re-form and re-model, a scheme of your educational life—a scheme of education for a lifetime; unless you write down questions to which you do not expect to be able to find the answer this year or next year, but of which you hope to get the answer ten years on. Plan your educational life as a whole, and then make steady progress year by year, and be very careful that you read the right books. If I had my way, I would have attached to every big public library a department of two or three well-informed men, who must be also sensible, who should have no other business than that of advising students what books to read; because nothing in the world matters so much to a young man or young woman as to be put in the way of reading the right books.

I will say three words in conclusion. They shall be brief words. First, an educated man must have a standard of intellectual excellence. He must know what is first-rate—and you can only get that knowledge by reading the best books; and, I venture to add, by reading those which are not of your own time merely, but which have a certain remoteness and the character of established classics. Of course he must read some books of poetry. Every now and then I come upon a person who, I think, really has never made any serious attempt to read any poetry at all. Occasionally it dawns upon me that they really are better acquainted with Shakespeare in Germany than we are in England. Well, besides poetry, there are certain books which mark epochs—which are full of great dominant ideas. The first book of Hooker's, "Ecclesiastical Polity," for instance, opened to the English imagination the idea of law. Milton's "Areopagitica" fastened upon the English imagination the idea of liberty. Burke's speeches are full of the great idea of what government means. Now these are all books which are masterpieces of style. There you see what great thought is, wedded to the greatest power of language of which English is capable. I would say to anyone who wants to be an educated man: Don't be satisfied without reading some of the greatest books in prose and poetry. And, I would add, the great romances. Don't be content without having read "Don Quixote" (which is a masterpiece, and also a classic in the English translation), and "Gulliver's Tra "Robinson Crusoe," and "Pilgrim's Progress. not gone beyond England except in one case, as I say, the translation is a classic, too. But a man ought to know some one language besides and I would add, apart from all question of it value, no man who would be educated ought to without being familiar with the Bible.

Then certainly an educated man, besides a s style—the sense of what is really great that from reading great books of classical standing— an apprehension of what real knowledge is as di from mere clever guessing or rhetoric. I think almost define education as a growing distaste fo For example, a man who has read carefully and three or four volumes among the great works Darwin has gained a permanent possession for That is to say, he has learnt what real distrus conclusions means, real sifting of evidence, rea caution, coupled with a wide outlook. If he has he will always be very distrustful of anyone w a statement by saying: "I suppose it will be all hands." Indeed, I should like to say that you hear anyone say that, you may almost t granted he is going to say something whicl doubtful. Or, again, you can get the same rapid conclusions, the same standard of stric from books of history, from reading a writer li those who occupied this chair a few years Creighton. Read his books, and you will be a what real love of truth is; how it sifts and disc how unwilling it is to go by its own inclinati educated man has a power, a gradually growi of distinguishing between careful conclusions rhetoric.

And then, lastly, the educated man, though h must, have his own special line, and though o is the foible of only the very ignorant, yet n some general sense of the unity of knowledge a place which his own special study holds in the knowledge.

A GREAT CO-EDUCATIONAL SCH

By the Rev. CECIL GRANT, M.A.
Keswick School.

CO-EDUCATION has had the misfortune to at various reasons, a half-hearted and qualified sup many who have no slightest idea of its real impo even of its real meaning. There has been, for ins attitude of the Official Mind. When I meet the official—and I have been much favoured in th of late years—I am amazingly impressed by qualities. But the Official Mind does not dep individuals, and has worked, I suppose, at all t in all places in much the same way. To the Offi there comes an enthusiast, making the great co-education and producing detailed proof from "Ah!" says the O.M., "*most* interesting. America is not England. And here I foresee grea —grave sociological difficulties. Besides, how upset existing institutions and our own plans! that in most favourable circumstances, and wit the head of it, it might avoid catastrophe, but to

[1] From an address at a conference on Co-education held at November, 1904.

y would be dreadfully dangerous, dreadfully

months later there reaches the O.M. from e-cum-Piggery a cry that the ancient grammar- be closed for lack of funds unless the Treasury eir assistance. The O.M. begins with a sigh yped response, "We much regret—" when here comes an inspiration. How about co- A score of girls or so would just keep the . That dogmatic fellow, the other day, cer- d as though co-education would produce a new a new earth. Why not try it at Slumthwaite- y? Perhaps he would accept the headmaster- the governing body of Slumthwaite Grammar luding My Lord Compromise, Rev. Mr. Facing- and Mr. Down-with-the-rates, whilst appre- economy of the scheme, find their sense of verely shocked, and finally let in the girls, but o shut them off from the boys by all manner ive—and therefore ineffective—barriers. How- cheme is launched; the O.M. feels delightfully hat perilously—up-to-date, and the *mot d'ordre* , "Wherever no money is forthcoming, where s essential, where no separate school can exist, ation. The governing body of Slumthwaite- y will be glad to describe the methods which dopted with so much success."

t, as will be seen, is, in the case which I have oubly terrible. Not only has co-education to f in circumstances in which no school of any be condemned to exist, but the system r from being co-education in any real sense, is, most dreadful opposite, yet has sufficient super- blance to brand the real thing with the discredit table failure. It is because schools with one these drawbacks do already exist, and threaten in number, that those who make the great co-education yearn for an entirely adequate it, which the nation at large shall recognise r a public school not merely in the sense of a the generous equipment and non-local character t schools, but as being felt, like our ancient to be a public—a national—possession.

en, are the elements of a great and a public

er I can supply will, of course, represent no my own. If my conclusions have any value the defence of them, with which I am pre- because they have been come by very honestly t, driven home by hard knocks and shrewd

st be *national*, and not local. Its site must ed by general considerations. It must draw from non-local sources. Its curriculum must enced by the needs of a district. Its govern- not be in the hands of those who have special erests to serve. On the other hand, since it uilt in mid-space, but must find a local habit- nce we may none of us shirk our duty toward rs, our school must recognise certain important ions. It must offer—as far as questions of will allow—an absolutely full share of its as many day-scholars as are prepared to pay d of a character to make good use of them. willing to offer free scholarships—provided by ption or otherwise—to as many children of he locality as can be shown to possess powers claiming such assistance. It must have local representatives on its governing body. I would myself go further, and urge that it should—without sacrificing its independence—voluntarily connect itself with the whole scheme of local education, from the infant elementary school upwards. I should like to see playing-fields shared, and other things too, which I shall not create apprehension or misapprehension by mentioning here more particularly. I should like, in a word, a truly neighbourly interchange of services, in which the school which had received most to start with would naturally *give* most, and find it *beatius dare quam accipere*.

I believe that some of our great and ancient foundations would have been more and not less truly national had they recognised more fully their responsibilities to their neighbourhood.

(2) Besides being national, it must be *free*, unfettered, uncontrolled. Let us be perfectly clear and open about this. It must be free, for instance, from interference by the Board of Education. That the Board of Education should exercise control over a large portion of our secondary education is a necessity—but it is a necessary *evil*. Interference may make the bad less bad, it is certain to make the good less good. And if the very able body of men on the Board do not entirely recognise this at present, I, for one, by no means despair of their coming to do so. I believe that they will come to say: Such and such a school has a competent headmaster. So long as he lives—and we do not hear that he has fallen into his dotage—we will not come near it, save to get hints from him. We will not ask him to fill up registers or to submit curricula or results of examinations. So glorious and inspiring a thing it is to be free. But this is a digression. For our great public-school liberty is a *sine qua non*. There must be no dependence on grants, no local government, no compulsory inspection save in matters of sanitation; no power of control, even by the trustees, apart from the ordering of the original scheme, the provision of buildings, the appointment and dismissal of the headmaster, and the management of finance.

(3) The school must be planned on a large and generous scale. How far the plan can be at once carried out will depend naturally upon circumstances at present unknown to us—and, indeed, within limits, it matters little. Only, let whatever equipment *can* be provided be of its kind the best. But a plan costs nothing, and matters much. A castle in the air is a much more inspiring thing than a cottage in a mean street, and our great school must from the very start have something really great about it, though it be only great dreams. We must set out with the resolve to want everything which is worth having, and to get everything which we want. If we make our headmaster feel that there is no meanness in the plan, no limit to the desire to get and to give, he will scarcely notice the discrepancy between what is to be and what is. Indeed, there is much to be said for initial difficulties. They are bracing and tonic in themselves, and later they are sweet in the remembrance.

(4) Our school must be of a certain size. Numbers are essential for power, for stimulus, for greatness, for efficient grading. It is certain that, *ceteris paribus*, a school of two hundred has enormous advantages over a school of one hundred, and this apart from the greatly diminished cost *per caput*—an argument which I find frankly, though I suppose unreasonably, distasteful. Cheapness as an inducement has such vile associations for me. But the upward limit of numbers is no less imperiously determined. The word "headmaster" ceases

to have any meaning for me if it does not connote a veritable knowledge of each individual pupil. In America they appoint more and more openly a kind of organising manager, chosen for the same qualities as the head of a dry-goods store. In England we appoint a genuine headmaster and give him an impossible task. The final limit, then, must depend upon the headmaster appointed, but I cannot conceive that it should ever exceed 250 or fall below 200. If circumstances demanded it, I would have two schools, even in one locality, absolutely independent and entirely parallel. So far from a division according to age, I look upon it as vital that the ages should have as wide a range as possible, and this both to give the headmaster a fair opportunity, and for the help that small boys and girls may be to big ones, and *vice versa*. I would even have a kindergarten and transition form attached to the school, but this perhaps under a headmistress with separate control, and not affecting the limit of numbers. It is essential, again, that there should be equality between the number of boys and girls and between the number of boarders and day-scholars.

(5) One of the characteristics of our school should, I think, be the avoidance of *faddiness*. It should not, I mean, *aim* at differing in as many respects as possible from other great schools. It should not consist of a mass of novelties—*les dernières nouveautés*, as the shops say. Such schools are fascinating to visit—they abound in America—and are doing a great service to the *future*; but our school is not to be an experiment, but a proof. We should wish to keep abreast of the best educational thought and practice of our time (much of which is to be found in very ancient institutions), *not* to say: "This must be wrong, because so many people believe in it." Greek, for instance, will neither be compulsory nor discouraged. Esperanto will not oust French. Above all, there will be no attempt to limit the headmaster in the matter of disciplinary powers—of reward and punishment—as has been done with such fatal results in America. It made, I expect, very good fun at a Roman circus to tie a man's right hand behind his back and set him to fight a tiger. But then you did not mind *which* won. If you set your headmaster to fight the world, the flesh, and the devil, and care about the result, you will not limit him in his choice of weapons because you have a friend who conquered (with a kiss and nothing more) an insurrection in her nursery. When a boy is on the brink of perdition and the headmaster joins battle over his body with the forces of evil, the thing is at all costs and by whatever means to win, not to try the latest of painless remedies advertised.

(6) *Cost.*—To estimate accurately in detail the cost of building and carrying on the "ideal" school is plainly impossible. On the one hand, it is clear that almost any sum could without difficulty be expended; on the other, there is nothing more certain than that the greatness of a scheme bears no ascertainable relation to its capital or annual expenditure. The rough estimate which follows does not pretend, therefore, to do more than indicate the minimum provision which, in my opinion, those who contemplated the foundation of a first-rate school would be bound to make. To some the figures may seem absurdly low, to others recklessly high. Some will criticise one detail, others another. Everyone will think of omissions. Nevertheless, the figures have been carefully considered, are based upon some experience, and, taken on the whole, may be safely preferred to any hastily improvised (rival) estimate.

I may say at once that a school for boys and girls will cost a great deal more in the building than a school for boys only, will require a larger staff, and e expenditure in several directions. The only s this is of doubtful morality—will be in the smal claimed by women-teachers.

It must be remembered that it is no part of of co-education that girls should follow the s culum as boys. There will naturally be a good jects which they will learn in common, but, e were not so, the root argument for co-educa remain as strong as ever—that our standard the home and home-life. Natural differences scrupulously observed and respected, and this more rooms, more class-rooms, larger playir larger staff, more equipment.

There are also certain things which th governors of an ordinary boys' school would as wildly extravagant, but which are neverthe able for the boys, and which the presence of enable them to demand. I shall ask you to with this general explanation, and shall not g ticulars in my figures. First, then, for the bu a school of 100 boarders and 100 day-scholars, kind being girls.

The cost of site depends too much upon h circumstances to make any estimate useful. I it out altogether, merely stating that there must than twenty acres altogether available, includir fields. It must, of course, be close to good ope yet, if possible, fairly near London, and withi a cultured and progressive community. Buildin (which I would build *first*), £3,000; big sch rooms, gymnasium, workshops, laboratories, rooms, £10,000; headmaster's house, with lar hall, four hostels, accommodation for unmar studies, sanatorium, &c., £15,000; equipment total, £30,000. Of this outlay, £18,000 would sary at once. The remaining £12,000 might be

Cost of education *per caput*, £30 for the first £20 for the second 100. This makes provision of about twenty, and does not include such extra instrumental music, special arts, and languages boarding *per caput* for 50 boys and 50 girls, matrons, service, &c., £35. Adding £1,200 a at 4 per cent. upon building money, we reac expenditure per annum of £9,700, or with £3 for upkeep and incidentals, £10,000.

This would perhaps be most simply met as 200 tuition fees at £25 *per caput* = £5,000, and ing fees at £50 = £5,000, making together th £10,000.

A few further observations are necessary. I seen that the day-scholars will thus be obtai education at something less than cost-price. Thi ever, not indefensible, and the share borne by th might even—not unfairly—be increased. Speaki ally, the higher the boarding fees the easier we it to attract boarders. It will be remembere provision is made for site. To this must be adde for the staff, and entrance and leaving sch These latter, at least—I mean the entrance ar scholarships—should be subscribed, and should a sum of not less than £2,000 per annum.

There would still be many things not thus pro not strictly essential to a great school, but still and appearing to believers to be quite necessar I would leave to be paid for by their advocates, extra fees or in donations. The sum set apart f would not be sufficient if it entailed saddling a

the risk and anxiety of hotel-keeping. But this
ccounts undesirable.
it would make a considerable difference in the
for the early years if no child were to be
above the age of twelve. And this course I
the whole advise, though I do not regard it as
Its effect would be to reduce the total expendi-
capital and annual, but perhaps rather increase
r caput.

ORY AND CURRENT EVENTS.

w there are among us who remember 1848!
of hopes has passed into history along with its
f disappointments and reaction, and it is almost
eling of surprise that we read now and then
like the late King of Denmark, who, having
part then, are only now passing away from
The Emperor of Austria is the only monarch
whose reign dates back so far, and he, like
X., came to his thrones in consequence of those
volutions. That was a period when dynastic
e still a potent force, and even to the end of
life his court was a meeting-place where the
all kinds settled many a germinating quarrel.
Duc de Broglie once pointed out how France
ternationally because the president of a republic
arily out of such family circles. Will our readers
their pupils to name the territories over which
uled?

lish princess is apparently going to marry the
pain. At any rate, at the date of writing, the
going on in just that part of the world where
Eleanor of Aquitaine courted Berengaria of
more than seven hundred years ago. Our
ts and Tudors had friendly relations with
overeigns until the quarrel between Spanish
and their Netherland subjects forced us to
rt of the country with which we traded, against
litary masters. In Elizabeth's reign we drifted
dly alliance into fierce commercial and religious
Spain, and the proposed marriage of "Baby
to a Spanish princess roused all our Protestant
l "Steenie" became a popular hero for break-
e treaty and going to war with his Catholic
Afterwards we were allied with France and with
Spain's enemies until she was annexed by the
and it was not until Spain revolted against
hat English and Spanish fought together again.
ously interesting it is to see these various
appealed to in the newspaper correspondence
risen on the subject of the anticipated marriage!

volution is accomplished. The Conservative
t has been overthrown. What has taken its
hat is the meaning of the late General Election?
questions that are being asked on all sides by
, ignorant of history, are astonished at what
ned in their midst. Do they not know that
a part of Europe, and that she therefore shares
of Europe? Only, because of our insularity,
less violently from change than do the nations
ntinent. We shared in the wandering of the
the fifth and sixth centuries, and Roman Britain
gland. We shared in the Reformation of the
entury, but while popes and emperors were
sing one another, Henry I. and Anselm com-
he Quarrel of the Investitures. Our Wars of
the Roses were a reflex of Italian and French and German "noble" wars; and we divided our Reformation (of the sixteenth and seventeenth centuries) into two parts, first political and then religious. And, not to multiply further instances, we are now having our share of social democracy, labour questions, &c., and, with our franchise wider than in other countries, the phenomenon is appearing perhaps as soon, but certainly more moderately, than elsewhere. History repeats itself both in time and place.

THE tour of the Prince and Princess of Wales in India has doubtless been the occasion of many geographical lessons. Incidentally, we have learnt much of our fellow-citizens in the East—of the origin of the Sikhs, for example, and of the interest to be found in the history of Rajput and other Indian chiefs. Among other hosts of the Prince has been the Maharajah (=*magnus rex*) of Mysore. That is one of the still independent States of India, as independent of the British Empire, that is, as any but the frontier States of the north. Its international relations are controlled by the British Government, and its rulers must behave themselves according to British ideas; and it was only in 1881 that Mysore was restored to its native ruler after a sequestration of fifty years. But now it has "a sort of representative assembly, which meets annually for a few days to lay before the ruler the petitions and grievances of the various classes, and to hear from his own lips a paternal explanation of the measures proposed by his Government." That is where *we* were in the fourteenth century. When will Mysore move on? and whither?

ITEMS OF INTEREST.

GENERAL.

SECONDARY education was not specifically referred to in the King's Speech at the opening of Parliament. "My Lords and Gentlemen" were informed, however, that a Bill would be introduced at the earliest possible moment for amending the existing law with regard to education in England and Wales.

REPLYING to a letter from Mr. A. H. D. Acland, formerly Minister of Education, Mr. Birrell, President of the Board of Education, has announced that provision will be made in the Estimates this year for a considerable increase of the Exchequer grants in aid of secondary schools; also to alleviate the burden now placed upon local authorities in respect of the education of teachers, and to assist further the building of training colleges for teachers by local authorities.

THE final report of the Departmental Committee on the Royal College of Science has been published. The committee has been considering for the past two years a scheme to provide advanced technological instruction and opportunities for research in applied science. It is proposed to establish a great institution at South Kensington, in which such existing colleges as the Royal College of Science, the Royal School of Mines, and the Central Technical College will be incorporated. The precise relations of the new institution with the University of London have yet to be defined. The report shows that the Government has agreed to contribute the buildings of the Royal College of Science and an annual grant of £20,000, the London County Council is prepared to provide a similar annual grant, and a capital sum of £100,000 has been offered by the firm of Messrs. Wernher, Beit, and Co. for initial equipment. The report suggests the immediate

appointment of a governing body of forty members to begin with, of whom ten shall be Government nominees, and five each appointed by the University of London, the London County Council, and the Council of the City and Guilds Institute. This body will act as the first management authority, and discuss the further details of organisation. We hope to deal more fully with the report in an early issue, in so far as it is related to secondary education.

WE are glad to see that attention is being directed to the excellent work done by the Sunday-schools of this country. The editor of the *Sunday School Chronicle* recently put together the personal testimonies of many leading men and women as to the permanent influence of the training received in the Sunday-school. Most striking of all is the anonymous evidence of "An Old Potter," who was a school-fellow of George Smith of Coalville. After describing the bestiality and immorality of the factory where he began to work at the age of nine, he says:— "Amidst these unfriendly and perilous circumstances, the influence of the Sunday-school stood me in good stead. It was not so much that I understood all the evil about me and saw into its baleful depths, as that I had an inward influence which gave me an opposite bias." When the history of English education comes to be written, full justice must be done to that army of nameless workers who, before education was organised by the State, trudged down week by week into the slums where the poor lived, and, with the spirit of the missionary which was in their hearts, compensated for the pedagogic defects which were in their teaching.

THIS we recognise to the full, but we are forced also to recognise the failings of the Sunday-school. If "order is Heaven's first law," then there is hardly any place where it is so flagrantly set at defiance as the Sunday-school. The usual lack of discipline is an object-lesson to all the children in disorder and, we fear also, irreverence. Whatever the lesson that is taught from the desk, the lesson that is learned by the children is too frequently a lesson in bad conduct, mercenary sponging, and disrespect to sacred things. Nowhere is there so much waste of well-meant effort as in a Sunday-school.

IT is therefore encouraging to find that the Educational Faculty at Manchester University has grappled with the problem in a practical way. For some time there have been lectures to teachers by Mr. Thistelton Mark; he is now arranging to take over the primary departments of four large Sunday-schools in Manchester, to train the teachers and organise the teaching. These Sunday-schools are to be in touch, on the one hand, with the regular day-schools of the city, and, on the other, with the theological training colleges. The theological students will visit the schools and observe methods, and the headmistresses of the Kindergarten Training College in the city and of the High-School for Girls, together with the high-master of the Grammar School, will act as periodical inspectors. This experiment "looks hopefully"; it is, we are glad to note, the exact antithesis of Dr. Aked's scheme, which aimed at converting the Sunday-school into a junior P.S.A., with addresses every Sunday, and a different speaker each time —a scheme which sacrificed that pastoral touch at present underlying all Sunday-school work, which, spite of all its faults and failures, has saved it from corruption, and makes it notwithstanding one of the redeeming features in our social life.

WE understand that a new grammar scho opened at Northallerton, which will provide acc both for boys and girls. It is probable th teachers' centre will be established later in con the new school.

VISCOUNT HAYASHI, the Japanese Ambassac distributed the prizes to the successful stud Northern Polytechnic Institute, Holloway Road his address said that scientific research made in the past century that it is no exaggeration t the present is the age of practical applicati phase of modern life. Therefore there is n important in the secular education of a nation tions which keep abreast with the stride Viscount Hayashi went on to say that he took administration of the Technical College at T College was established some thirty years ago w of many British professors and men of science v are well known in Europe, and from it tl students have been sent out to take part in and other works necessitating the scientific ap the mechanical arts. Japan owes very much t educational work, and the Japanese people are v for the assistance which Great Britain gave in ment.

IN his presidential address to the Association Institutions, Sir William Anson, M.P., surveyed of study and the education provided by seconc in the past and in the present, and noted what l to be shortcomings. It is strange to look bac upon the education given at our great public sc or forty years ago. Education it was, in the of the word, but of a peculiar sort. What wa the English public-schoolboy was a life free wholesome, with abundance of leisure and of o for study. The boy was required to read quantities of the great classical writers, not sys not taking specific books, but falling in at the the class happened to have reached at the entered it. Nor, as a rule, was any attem explain to him who the writer was, what was character of his work, why it was selected fo what was the relation of the part which the bc to be reading to other parts of the same wo works of the same author. Still, the boy was l contact with much fine literature, if his acquai it was not made as profitable as it might hav sometimes acquired a considerable facility in tl tion of Latin or even Greek prose and verse, had access to a good library, and leisure fc reading. Mathematics he might learn if he ch advantage of the teaching available. History taught, though he was expected to know some f of examination. Geography was certainly taug as we should teach it now; the teaching consi in the ascertainment of the modern names of pl in classical antiquity.

CONTINUING, Sir William Anson said that w our past shortcomings. Our needs in the matte have been more fully realised and more effective have our needs in the matter of modern langua are trying hard to meet both. And yet we hav over the common stumbling-block which tries in our educational endeavours. We have ove human element in the transaction. We have said has hitherto been neglected, so have modern

rovide laboratories, and a curriculum in which subjects shall be included, and all will be well." resent result of our efforts to correct failings in is unfortunate in two ways. In our secondary e have put into the course of study all those ne neglect of which has been referred to, and we n out comparatively little of what was there What, then, is to become of the poor boy who is to learn two or three languages in addition to who is taught history, geography, science, and ics as well, and who in the intervals of study d to regard his games as a part of the serious f life? The impression left upon the boy's mind e is always at work upon something, but never gh at work upon anything to create an interest, very substantial knowledge, and that the weari- rt which results in a smattering of many things, stering of none, creates a feeling of disappoint- lisgust.

s of education committees, managers of schools, ers, are the three essential props by which our y school is supported, and they are in general as ved from one another as the three feet of a The conference held on February 10th between bers of the West Sussex and Chichester Joint Committee and the managers and teachers of nder their control is therefore of noteworthy e; for it represented a praiseworthy attempt to e separate points of view upon what should be on object of them all—the physical, mental, and velopment of the child. It would be to the e of educational effort if similar annual con- were convened by other education committees; e principle could be extended to secondary schools, ers meeting the head and the assistants ly for the discussion of problems in which they upposed to be interested, the result would be g.

Chichester conference the chairman of the Educa- mittee, Mr. W. E. Hubbard, gave an address full sense as to the aims of educational work in chools. The matters subsequently discussed were ing of cookery, gardening, and other practical the teaching of the laws of health, and the age children should be admitted to public elementary Practical teachers expressed their sympathetic n such useful subjects as cookery and garden- pointed out at the same time that the subjects be taught successfully without increased staffs in s, and the provision of other facilities.

e age at which compulsory attendance at school mmence, there was a diversity of opinion. The ex Education Committee, in common with others the country, has wisely decided gradually to ildren under five years of age. In countries like where physical and psychological considerations in mind in formulating an educational system, tion of children is compulsory from the age of six en, which are the most important years in the story of the average child. It may be convenient parents to send infants under five years of age to ut education committees have complete justifi- declining to accept the charge unless they are to equip rooms for kindergarten instruction by pecially qualified to give it. In rural districts, ildren often have to walk a mile or two to school, whatever the weather may be, to make attendance under five years of age compulsory is not only a mistake—it is a crime against common sense and the laws of healthy development.

The London branch of the German Language Association held its seventh annual meeting on February 3rd. The objects of the association are to extend the knowledge of German literature and to assist in fostering friendly relations between Great Britain and Germany. Dr. Aloys Weiss, the president, in the course of his address said that the number of members of the branch has increased from 542 to 600 during the past year; half of that number are English by birth or naturalisation. One of the objects of the general association is to purify and simplify the German language, and the London branch has endeavoured to advance the study of German in this country by extending the knowledge of German literature, and thus contribute towards Anglo-German friendship. The motto of the association throughout the seven years of its existence has been "Loyalty to the German Fatherland and friendship to England." Prof. W. Rippmann afterwards read an interesting paper on "Allegories of Hans Sachs."

The distribution of the prizes and certificates awarded at the twenty-first grand annual competition in the French language and literature carried out by the National Society of French Professors in England took place in London on February 3rd at the Mansion House, under the presidency of the Lord Mayor. M. Paul Cambon, the French Ambassador, introduced the Society to the Lord Mayor. He said these annual competitions continue to increase in importance every year, not only from the point of view of the number of competitors, but also from that of the difficulty of the tests. The youthful candidates have shown their desire to familiarise themselves more and more with the French language and literature, and shown also that they are becoming stronger and stronger in French. The following were the principal awards:—Sèvres vases given by the President of the French Republic—*hors concours*, Royal Military Academy, Woolwich; vases, Clapham High School for Girls and Cheltenham College. Gold medals given by the Minister of Public Instruction—Miss T. Frank, Kennington High School; Mr. F. Ayrton, Cheltenham College. Silver medals given by l'Alliance Française—*hors concours*, the Misses M. Fowle and M. Barringham, Ladies' College, Guernsey; medals, Miss I. M. Whitechurch, Blackheath High School; Mr. A. H. Scott, Cheltenham College; Miss M. Tirard, pupil of Mlle. Paquier. Silver medal given by M. Paul Cambon—Gentleman Cadet M. Goldman Monk, Royal Military Academy, Woolwich. Silver medal given by M. Camille Barrère, French Ambassador in Rome—Gentleman Cadet A. G. Glenday, Royal Military Academy, Woolwich. Special competition medals—Miss C. Bagnall, Clapham High School; Mr. A. W. Douglas, Owen's School, Islington. *L'Entente Cordiale* (Anglo-French Society) competition for *bourses de voyage*, value £20 each—Miss M. H. Campbell, Royal Holloway College; Mr. E. W. Lynam, University College, Cork. Competition of *l'Entente Cordiale* (Anglo-French Society) for *bourses de voyage*, value £10 each—Miss M. C. Thompson, Mr. A. R. Wollrom.

It is not often that the vice-rector of the Academy of Paris communicates directly with the French schoolboy. M. Liard has, however, just adopted the direct method of appeal in his effort to arouse sympathy for the crusade against the increase of tuberculosis in large cities. The rector proposes that an association should be formed in

each *lycée* to raise a fund for sending poor children back to the country under conditions that will enable them to earn their bread on the land. "For," says the circular, "it is among the transplanted that tuberculosis makes most havoc." If the suggestion should become effective, "you will," M. Liard tells the *lycéen*, "experience the joy and pride of helping to save some lives." And the expense need be but very small, for the maintenance of each child costs one franc a day in the society for which the rector holds a brief, viz., "L'Œuvre de la Préservation de l'Enfance contre la Tuberculose," founded two years ago by Dr. Grancher.

AT a recent meeting of the Paris Academy of Medicine M. Josias read a paper founded on some inquiries made by M. Lop, and insisted upon the necessity for taking measures to prevent the transmission of infectious diseases by school books. There can be no doubt that scarlet fever is transmitted in this way, and it is highly probable that tuberculosis, diphtheria, and other contagious diseases are also spread in a similar manner. M. Lop proposes that at the end of each scholastic year books which are to be handed on to other scholars should be disinfected and all books in the possession of any child attacked by an infectious disease should also be disinfected. Exposure to high-pressure steam for forty minutes is an excellent disinfectant, but this method destroys bindings. The most practical method is that of Michel, which is based upon the use of the vapour of formic aldehyde.

M. BIENVENU MARTIN, Minister of Public Instruction in France, has issued a circular relative to the *diplôme d'études supérieures*. This certificate is valued by many students who do not intend to become teachers, as evidence of attendance and diligent study at a university. In July, 1894, greater latitude was shown to candidates who offered history and geography, and ten years later, in June, 1904, a corresponding privilege was shown to those who offered philosophy, classics, and modern languages. The results of the latter experiment have now been described by M. Martin as satisfactory, but he learns that several faults are appearing, against which candidates should be warned. The object of the generalisation of studies was to allow candidates for the *aggrégation* to separate better their scientific from their professional education. Experience gained from the examination of candidates offering history and geography has shown that students are inclined to be too ambitious and to choose subjects too vast, so that their voluminous reports are incomplete, badly co-ordinated, and hastily arranged. It is better for candidates to confine themselves to a circumscribed area and examine minutely the materials collected. They will thus accustom themselves to a precise examination of a text, and the subject of their *mémoire* will be proportioned to the strength of young people making a *début* in scientific work. A faculty is well advised in drawing up questions round which the subjects of *mémoires* can be grouped. This programme should remain in force until the faculty deems it exhausted. Candidates are further warned that the subjects accessory to the examination should not be neglected in favour of the *mémoire*. Excellence of the latter will not be allowed by juries to atone for weakness in the other parts of the examination.

THE attention of the Teachers' Registration Council has been directed to the fact that on July 31st, 1906, the date on which Regulation 4 ceases to be operative, the results of certain final examinations for a degree, and also of certain of the examinations mentioned in the appendices of the Teachers' Registration Regulations, wil been made known, though the examinations been undergone before that date. The council ingly ruled that teachers, whose qualification f tion is affected by the publication of the resu to, shall be permitted to make provisional app registration before July 31st, 1906. The coun unable to consider applications under Regulati visional or otherwise, which are not lodg Registration offices *on or before July 30th*, 1906

THE Plymouth Education Committee has reso list of efficient private schools shall be published to time; that in order that the efficient schoc ascertained, the thirty-five schools in Plymouth registered number of pupils exceeding twenty offered inspection under the Board of Education at the expense of the education authority; tha preliminary to inspection be made in accordanc schedule prepared by the committee; that the informed of the aids and privileges which ma by the authority under certain conditions to schools, and that they be further informed th report on the schools by the inspecting agency published without their sanction. The resolutic put into effect forthwith.

FOLLOWING the line of reasoning in "H. letter on "Military Training in Schools," publis last issue, the Hampstead Peace and Arbitrat has distributed a circular to school managers masters dealing with "the doctrine that patrioti in the encouragement of the military spirit exercises." The circular maintains that "th greater opportunity for the display of public sp exercise of the arts of peace," and appeals to use their best efforts to counteract the doctrine of as commonly accepted. That military training i to the full development of bodily strength is de circular, and attention is directed to exercises by the life-saving brigades for securing the p of life in time of danger and in rendering f cases of accident. These processes, it is ur accompanied by Swedish drill, tend to a comple development, to keen observation and to sym suffering and weakness. The circular is a body of representative persons, among whose notice those of Canon Barnett, Mrs. Sophie B Mr. John Russell.

THE review of the work done during the pa the Association of Assistant Mistresses, whic cluded by the president in her address at the rec meeting, shows that the association maintains it as a working society. Copies of the associati scheme and form of agreement for assistant were sent to all education committees of c borough councils. The association has given and sympathy to the scheme for a Federal Secondary Teachers, arrangements for which h be completed. The association has taken pa conference initiated by the Association of Assista on salaries in London secondary schools and in tion sent by the conference to the London Coun and joined in the publication of two pamphl subject. Its representatives have conferred wit the Headmistresses' Association on tenure. Wh that assistant teachers should be servants of the body, and dismissible by it alone, the association

n that the growing practice—among local authori- taking the initial selection of the staff out of the the headmistress is injurious to the efficiency of l, and considers that the staff should be nominated headmistress, and appointed after a period of by the governing body. The Association of Mistresses has a representative on the committee lassical Association, and its science sub-committee d with the Public School Science Masters in a n to the Cambridge Examining Syndicate. In the rapid development now taking place in the ion of secondary education, the executive of the n has appointed a sub-committee to collect in- on the action of local authorities with regard lary education.

lass-lists of the Cambridge Local examinations t the total number of candidates entered for the ions, held in December last, was 15,144, ex- f 1,931 candidates examined at colonial centres. Senior examination, 845 boys and 1,051 girls 106 boys and 22 girls being placed in the first ufficient merit was shown by 492 boys and 148 ntitle them to exemption from one or both parts Previous examination. Of the junior candidates, ys and 2,007 girls passed, the numbers placed in class being 416 and 76 respectively. In the ary examination, 2,086 boys and 1,446 girls the examiners. The awards of scholarships and the examiners' reports, the tables showing the or failure of the individual candidates in each and the class-lists for the colonial centres, will be d in the course of the month of March.

Monthly Record of the League of the Empire it ced that the following message has been received League from the Colonial Office on behalf of the of State for the Colonies:—"I am to convey an expression of Lord Elgin's satisfaction that the the League is so well appreciated in the Colonies, his lordship's interest in the historical publications re being undertaken by the very competent com- hose services the League have been able to enlist." the New Zealand Education Department, Mr. the Premier and Minister of Education, sends the the following subjects for school debates or —"British Colonisation in New Zealand," "Maori " "The History of New Zealand up to 1900."

letter to the *Pall Mall Gazette*, Mr. H. F. Trippel ttention to an anomaly in the results of the com- examination in December, 1905, for admission to al Military Academy, Woolwich, which was the mination held under the new Army regulations. atics is a compulsory subject, and must be taken very Woolwich candidate. Among the competitors as one who scored zero in mathematics, and yet place among the successful candidates. It has been proved that a candidate can pass the com- examination for Woolwich without securing any in the "compulsory" subject, mathematics. We with Mr. Trippel that a sound remedy for this linary possibility is necessary at once, since all tes for commissions in the Royal Engineers or Artillery ought, in view of their future work, to sound knowledge of the fundamental parts of atics.

IDATES who wish to sit for the next examination irth-class clerkships under the London County Council must send in their applications to the Clerk, County Hall, Spring Gardens, by March 16th. Their age must then be more than eighteen and less than twenty-three years. The examination consists of two parts; from the preliminary, to be held on April 2nd to 4th, will be exempted those who have passed the matriculation examination of any of the universities of Great Britain, the higher or senior local examinations, that of the Joint Board, or the L.C.C. preliminary in 1904 or 1905; the competitive examination will take place on May 14th and the following days. The subjects, of which any four may be taken, in addition to general knowledge, are:—English language and literature, pure mathematics, applied mathematics, any modern language and literature, any other modern language and literature, Latin, English history, economics, outlines of English local government, elements of English law, mechanics, physics, chemistry, and bookkeeping and accountancy. There are four classes of subordinate officials of the Council with salaries rising from £80 to £300; there are several appointments at higher salaries, which are usually filled by promotion. The persons appointed are required to give their whole time to their official duties, and are subject to the Council's regulations in respect of the superannuation and provident fund.

THE competitive examination for admission to the Royal Military College, to commence on June 26th, is the second under the revised regulations. Applications must reach the Secretary, Civil Service Commission, not later than April 2nd. "Each candidate must, on the first day of the examination, hand in to the superintendent of the examination room either (*a*) a 'leaving' certificate on a form approved by the Army Council, or (*b*) a 'qualifying' certificate issued under the authority of the Army Council, or (*c*) a War Office certificate that he has been exempted by the Army Council from the necessity of obtaining either a 'leaving' or a 'qualifying' certificate." The subjects of the examination, for each of which 2,000 marks are obtainable, are:—Class I., *Compulsory*, English and French or German; Class II., *Optional*, mathematics i., mathematics ii., history, German or French, Latin or Greek, science. Only two of the subjects in Class II. may be taken, and if one of these be a modern language it must be different from that selected in Class I. In addition to the above-named subjects, candidates may take up freehand drawing, to which 250 marks will be allotted. In the syllabus of subjects, practical work appears in mathematics i. and ii., and history includes (1) a general paper on English history; (2) (*a*) a period of European history, or (*b*) a general paper on ancient history; and (3) a military biography, prescribed annually.

THE next examination for admission to the Indian Police Force will be held simultaneously with the June examinations for admission to the Royal Military College, and the papers for the two examinations will be the same. The revised scheme requires that candidates take up not more than five of the nine subjects named above, of which English must be one. Applications must be sent in not later than May 1st. The age limits are nineteen and twenty-one years on June 1st. This service has the advantage over the Indian Forest that successful candidates at once take up remunerative appointments without any further expensive period of training in this country. Probationers must sail not later than October; a free passage is provided. They receive Rs. 250 a month; on passing the necessary departmental examination they become assistant superintendents of police with Rs. 300 a month, increasing to Rs. 500. There are excellent prospects

of promotion to the rank of district superintendents with salaries of from Rs. 500 to Rs. 1,000; there are a few superior posts with salaries of from Rs. 1,000 to Rs. 2,500. The competition at this examination from 1897 to 1904 has averaged four to one. Successful candidates are required to satisfy the Civil Service Commissioners of their ability to ride. They must also pass a medical examination, which, judging from the number of rejections last year, is more severe than that for other appointments in the service. In their general notices the Commissioners suggest that candidates should be examined, before they compete, by the medical adviser of the family or any other qualified medical practitioner, who should bear in mind that the question of fitness involves the future as well as the present, and that one of the main objects of medical examination is to secure continuous effective service, and, in the case of candidates for permanent appointments, to prevent early applications for pensions.

SCOTTISH.

GENERAL consternation has been caused in Scotland by the threatened loss of grants to the extent of £211,000, representing the unappropriated surpluses for the past two years of the equivalent grant that came to Scotland in consequence of the increased grants to England under the Education Bill of 1902. Owing to the failure to pass the Education (Scotland) Bill, in which provision was made for the allocation of the grants, this sum was carried to a suspense fund until Parliamentary authority could be obtained for its disposal. The Auditor-General has now intervened, at the instance of the Treasury, on the plea that all unexpended balances in last year's estimates revert to the Treasury. In ordinary circumstances this may be accepted as a thoroughly sound business principle, but the present case is quite exceptional. For two successive years, plans for the allocation of these funds have been submitted to Parliament, and only the impotency of the parliamentary machine prevented their being passed. It would be intolerable if Scotland, in addition to losing her long-overdue Education Bill, should also be mulcted in a sum of almost a quarter of a million. Some way out must certainly be found.

THE return of Sir Henry Craik as member of Parliament for the Universities of Glasgow and Aberdeen has given the greatest satisfaction in educational circles. His undoubted sympathy with the aims of Scottish teachers and his exceptional knowledge of all that concerns Scottish education should make him a constant and effective advocate of everything that makes for educational progress and the welfare of the teaching profession. Sir Henry was returned by a substantial majority over his two opponents, and in that majority were represented men of all shades of political opinion. Their support was rendered to him out of admiration for his great services to education in the past, and from a desire to have the benefit of his unrivalled knowledge in the many educational problems that await the solution of the new Parliament.

CAPTAIN FOSTER, H.M. Inspector of Physical Instruction, in the course of an address to the Edinburgh teachers, said that in the past he was afraid both inspectors and teachers were satisfied by any sort of movement where uniformity was secured. The effect of each movement on the young and tender bodies of the pupils was seldom considered. If fifty pairs of hands were pushed out at the same time and fifty pairs of feet stamped the floor at the same instant it was considered sufficient, although, as a matter of fact, many might be accentuating and confir common defects of school children, stooping, sin contracting the chest, and bending the spine too the upper and lower part. Most of those faults were due to the unavoidable repose of school life bending of the upper part of the body forward o and tables. In these circumstances the vital par heart, and digestive organs, all suffered. The ex the official handbook were all directed to cou these defects, and he hoped in the near future such additions and alterations in it as would re still more useful guide to the teachers who .tool this work.

EDINBURGH SCHOOL BOARD, by a majority of nir has disapproved of the new memorandum on the of teachers. The majority contended that while a the pupil-teacher system it created a new m training, under non-representative authorities, wit security that candidates would receive adequate training. A committee was appointed with powe action to prevent the minute from being put in c Forfar School Board is unanimous in protestin the new regulations. Their objection is founded the ground that the training of teachers is i associated with the whole educational system, attempt should be made to deal with the par relation to the whole. The question would natur in connection with the next Education Bill, v opportunity would be given for its considerati Board also protested against the practice of gettin vitally affecting the educational interests of the rushed through Parliament by means of minutes the table of the House for a short period, and necessarily having to undergo Parliamentary criti

SIR HENRY CRAIK, addressing the teachers northern counties, said that a satisfactory syste tiring allowances was essential for any large and i professional class paid by annual salary. The Superannuation Act did not fulfil that condition felt he was not betraying any dangerous secret said he was dissatisfied with that Act. In parti regretted the fact that the power given to Scotti boards to supplement the pensions of their teac been withdrawn. While the Act was being consi pressed his objections on that point to the furth that the discipline of the service would permit. plained his position fully and frankly to the repre of the Scottish teachers who were watching over and it was startling to him to hear a few days these representatives were prepared to accept drawal of this valuable privilege at the instanc English teachers. He had always maintained surrender was a grave mistake, and, so far as his would go, it would always be exerted in favou restoration to school boards of the power to su pensions.

A CIRCULAR has been issued by the Scotch Department intimating the conditions for the the leaving certificate in Gaelic. For the present to be only one standard recognised for a pass, will be equivalent to the lower grade in other subjects. Conversation will form an essential pa examination, and the written paper will—as languages—consist chiefly of translation and re-tr. One important provision in regard to the issue cates is that, provided the qualifications of the te

scope of the curriculum on the subject have been oved by the Department, due weight will be given to verdict of the teacher in determining the success or re of individual candidates. This is a concession that long been looked for in regard to other subjects, and y safely be anticipated that a provision so thoroughly ational will soon be found governing all the subjects e curriculum.

IRISH.

HE first deputation received by Mr. Bryce as Chief retary for Ireland was concerned with technical instruc-, and his reply was so sympathetic that it has aroused ndant hope that the new Government will do their for the improvement of Irish education in all depart-ts. The deputation included the Roman Catholic p of Waterford and the president of Queen's College, . It was an easy task to point out that technical ruction is greatly crippled by lack of funds, which s enthusiasm and prevents the accommodation of buildings alike for teachers and students. In fact, nical instruction is only in the initial stage in this try, and instead of receiving very much less than its rtionate share of Imperial funds, it should receive derably more, as initial expenses are always heavy. his reply, Mr. Bryce asked the deputation to make uiries and let him know as definitely as possible how would be wanted in Dublin, Belfast, Waterford, and , and how much is spent in Ireland upon technical truction as compared with England and Scotland.

R. BRYCE then went on to deal with the relations primary, secondary, and technical education. Good mary education is essential for good secondary educa-n, and good secondary education is absolutely essential the progress of technical instruction. It becomes there-re necessary, in considering the question of building-nts for technical instruction, to consider whether in rious towns improved secondary-school buildings may also be requisite, and to combine both if possible. e following words are hopeful:—"I assure you I feel ngly how much is to be done in all branches of Irish ucation. I don't think there is anything to which the rts of the Government should be more directed than deavour to extend education in Ireland in all its ts. It has always seemed to me that one of the great ts of the country is the extraordinarily keen intelli-ce of the people and the interest they have in learn-. . . They are a natural asset of the highest value, everything that is spent in developing the national t will be of the greatest possible benefit to the country. pe that much will be done to simplify your educational s. I conceive that if that were done it would engthen our case with the Treasury, and that we could k for a more liberal treatment of Irish education than e exists if we could present a scheme involving greater ency and efficiency than are attained at present."

HE mid-winter issue of the quarterly *Journal* of the partment of Agriculture and Technical Instruction, which y been published, is distinguished by a series on practical forestry. For those interested in , however, its chief feature is a verbatim report quent address by Dr. M. E. Sadler delivered last in the Rathmines Town Hall on "Commercial on." It should be studied by all persons who embark on "commercial sides," whether in ry schools or places of technical instruction.

AT the annual meeting of the Central Association of Irish Schoolmistresses a well-deserved vote of thanks was passed to Miss A. Oldham for her great services to Irish education while she was secretary of the association; and a paper was read by Miss E. Cunningham on "High-school Work in England." The paper traced the course of events which led to the establishment of girls' high-schools in England in 1872, sketched their subsequent history and development, and gave a detailed account of their constitution, aims, and methods. The discussion that followed showed a great desire for fuller development of the teaching of classics in girls' intermediate schools, and for the establishment of a proper system of registration of teachers in this country.

THE Irish Association of Women Graduates and Candidate Graduates is starting a new literary and debating section, and at a recent meeting instructed its provisional committee to take the necessary steps to draw up a programme for the present session, and to make arrangements for beginning meetings in February.

THE Dublin Education Society has elected for its president for 1906 the Rev. Dr. F. M. Watters, the president of the Catholic University School in Leeson Street. Some comment has been passed on the fact that at the annual meeting no statement of accounts was presented as prescribed by the Society's rules. The secretaries for this year are Mr. J. Macken, of St. Patrick's Training College, and Mr. Hanly, of the Dorset Street Schools.

WELSH.

AT the annual meeting of the Llangollen Flower Show the promoters discussed the increasing importance attached to practical country education in such developments as nature-study, country excursions, &c. It was suggested that floral societies should play their part in these matters. As a practical measure, they decided to approach the various educational authorities in the district and to offer to admit pupils of the schools to the show-ground without entrance-fee. Whilst such an attitude shows enthusiasm for enlisting general interest in horticulture, it is difficult to see logically any limit to the application of such a principle. Are all the possible avenues for gaining useful experience and knowledge to be thrown open to every boy and girl, as *free of expense* as the school—*e.g.*, circuses, theatres, concert-halls, all manner of useful entertainments? However, in the instance quoted, it was gracious of the Llangollen Floral Society. We are not sure but that, even in this case, as much good might have been done by granting the privilege of free admission, if the educational authorities gave their consent, to those boys who had done *good work* and shown aptitude in nature-study and botany.

THE Oswestry Grammar School was founded, according to Leland, as early as the reign of King Henry IV. The Oswestry Higher Education Committee is now said to be discussing "whether the Town Council should be got to take steps to compel the Grammar School governors to make the school a secondary one, or should ask for a secondary school to be built." The Education Committee has passed the following resolution:—"That this committee is of opinion that steps should be taken to place the Grammar School under the Board of Education as a secondary school, and that representations be made to the Oswestry Town Council urging them to make the necessary application for the recognition." It is, of course, clear that in a town like Oswestry there is not room for an indefinite number of schools, but it is also clear that if

the choice is between making all the secondary schools of the county of precisely the same type, and of having at least one public secondary school in the county a good classical school of the Grammar School kind, at least the latter alternative should receive careful attention, if not from the town, at least from the county. Or it may be thought that Shrewsbury School suffices for all needs in this direction.

THE second Welsh National Conference on the Training of Teachers has been held at Shrewsbury. There were present representatives of the University, the Central Board, and every county education committee in the Principality. The object of the first resolution was to suggest that pupil-teachers should spend the first of two years of apprenticeship at secondary schools or at pupil-teacher centres, and the second year in practical work in connection with the teaching in an elementary school, or *vice versa*. This was considered, however, a temporary measure. The conference agreed that it is desirable that the pupil-teacher system should be abolished as soon as practicable. A most enthusiastic protest was then made and entered against the half-time system, as unsatisfactory both to the heads of the primary and of the secondary schools. The second resolution expressed the opinion that a Welsh National Council of Education should be established, to which should be referred the question of the training of teachers—primary and secondary—for Wales. The third resolution asked the Board of Education for an increase in the grant to the local education authorities for the purposes of the training of teachers. A scheme was submitted from Cardiganshire, in which county it is proposed to abolish the pupil-teacher system, if the committee can get from the National Exchequer a sum equivalent to a halfpenny rate. It was further decided that pupil-teachers should not be counted as effective members of any school staff, and that prospective teachers, as far as practicable, should be granted facilities for obtaining degrees.

AT a meeting of teachers at Carmarthen, the president of the local association, Mr. W. H. Mitchell, spoke on the rural schools. He said it would be a bright day when village schools were financed according to their *needs*, and not their needs supplied according to their finances. The intermediate schools in Carmarthenshire were provided with one adult teacher to every twenty pupils, whereas for the 7,000 scholars in the purely rural elementary schools in the county they had possibly 100 adult teachers, or one for every seventy children.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Cambridge Phonographic Records. Edited by Mrs. Frazer. (Heffer.) 3*s.* each.—We congratulate Mrs. Frazer on her enterprise in undertaking to furnish teachers of modern languages with a series of phonographic records. There are French records by M. Chouville, French songs by Mr. von Glehn, German recitations by Dr. Breul, and we are promised Latin and Greek records—an exceptionally bold venture. The sample records submitted to us are, on the whole, very creditable. Doubtless, as Mrs. Frazer's recorders become more experienced and the instruments are improved, we shall gradually have results more satisfying to the æsthetic sense. It cannot be denied that at present the voice suffers in reproduction, and is harder to reproduce satisfactorily than song it is largely a matter of experiment, and w doubt that Mrs. Frazer will be able in cour to improve on these very respectable first attem

English.

Lingua Materna. By R. Wilson. 1–208 pp Arnold.) 3*s.* 6*d.*—This is a much wanted bo might have been compressed. We really do n chapters on grammar, on the study of words the schemes of work. All this has been done before, and we would willingly spare these p author had filled out the admirable sections literature and on method. But he hits the head when he practically says, "We do literature well, we do not encourage taste, *teachers themselves are not soaked in literat* book on any section of teaching is complete unle plainly to the teacher, and this book ends witl on the teacher's equipment. Why did not the this chapter first, and print it, Ruskin fashion, So carefully written a work should not speak o Endymion, and it is doubtful if Miss Yonge Christian names (unless a new edition has bee lately) should be recommended to anyone req and scholarly work.

Middle English Reader. By O. F. Emers 475 pp. (Macmillan.) 8*s.* net.—This book is condensation. Numerous as its pages are, t nothing compared with the enormous field of which has been covered by Mr. Emerson. Th his reading and the depth of his knowledge a likely to escape only those who have but a sma ance with the subject. Briefly stated, the pur volume is to serve as an introduction to t language and literature of the period lying b years 1100 and 1500 A.D. To read the gramm duction only is a stiff linguistic task; its thor remarkable, and it is as clearly put as it is fu matter. The book is arranged upon the basis dialect of English at this period, namely, th though the selections are arranged on a wide comprise most of the great dialectical divisi language as spoken at that time. The justifica arrangement is to be found in the preface to t which in itself makes good reading, and every this period will be, we believe, the better for giv heed to Mr. Emerson's view of the preponder ance of the Midland dialect, as compared both Saxon, Southern English, and the dialects o London. The selections are numerous, and not to each giving such information as is knowr manuscript, date, author, and some account c from which each extract is made. The glossa prepared also on the basis of the Midland dia words used in other dialects are included, and ences are given. It is not a book for beginners student who has just passed the initiatory stage study in the Middle English period it will prove

Verses and Translations. By C. S. Calverley Introduction by Owen Seaman. ix.+184 pp. —*The Last Essays of Elia.* By Charles Lamb Introduction by Augustine Birrell. xiv.+296 net. (Blackie's Red Letter Library).—This d is sure to secure an increasing number of adr only the handsome style of production, but the

her excellent introductions and the well-selected notes are calculated to appeal forcefully to all

ing of the Shrew. Macbeth. Both edited by ambers. (Blackie's Red Letter Shakespeare.) each.—We have on more than one occasion igh praise of this charming series. It is only o say that the present volumes maintain the of the Red Letter edition.

ulay's Essay on Addison. By R. F. Winch. p. 1s. (2) *The Talisman.* By F. Johnson. pp. 1s. 6d. (3) *Macaulay's Essay on Clive.* Buller. xvi.+114 pp. 1s. (4) *The Heroes of* y M. R. Ende. xxiii.+120 pp. 1s. 6d. (Mac- hese booklets continue the series of English r secondary schools, which Mr. Fowler is edit- ll his well-known taste and skill. Three of ent texts which are already familiar, in a variety and guises, to those engaged in education; ture to commend them for their outstanding of presentation in this edition. Scott's novel se, abridged; but Miss Johnson has done her and, apart from this, her introductory matter ly well worth study. With regard to "The Asgard" commendation is also deserved, for Scandinavian mythology are little known, and ooks of Dr. Wagner and others upon the sub- ither accessible nor suitable for young people. easure to praise all of these volumes. The are excellent.

r's Battles of the Peninsular War. 128 pp. *ck Hole of Calcutta and the Siege of Plassy.*) *The General History of Virginia.* 128 pp. et. (Blackie.)—Dr. Rouse has made another d volume in this series out of Napier's pages, s four of that writer's most stirring episodes second booklet is by Robert Orme, of whom n a recent notice; and the third by Captain . This selection of texts is in every way to be its literary excellence and its interesting and nature.

er's Tale. By T. G. Wright. xx.+140 pp.) 1s.—This is an addition to the "Swan" by virtue of its pictorial no less than its ellence it may be commended. The notes have t of brevity, and the examination questions are ed.

Travels. By G. Ravenscroft Dennis. xxxii.+ ell.) 2s.—The inclusion of this edition of a classic in Messrs. Bell's "York Library" every way to be praised, and we hope that s of Swift's writings will ere long follow, urnal to Stella" has preceded it. The text is f a careful collation of all the early editions, oduction is supplied by the editor, who gives of the various editions through which Swift's have passed. Notes are appended, sufficient n ordinary reader to understand the allusions and among these some geographical notes are terest. Altogether a valuable and charming of a wonderful piece of literature.

citations (Junior). Books II., III., IV., V., argaret Riach. About 32 pp. each. (Blackie.) 1d. each.—As worthy of every commendation as the foregoing series, upon which we have already complimented Miss Riach. Just the thing for junior scholars.

History.

A History of Modern England. By H. Paul. Vol. IV. vi.+411 pp. (Macmillan.) 8s. 6d. net.—This volume of Mr. Paul's history is, whether owing to the events described or to the author's belief about them, sad reading. The first part tells the story of the years 1876–1880, during which Lord Beaconsfield was Premier. The main subject of English history then was the Eastern Question, and we follow the story of the revolt of Christian races in the Balkan peninsula, the ruthless cruelty with which they were opposed, and the tortuous policy—so Mr. Paul describes it—of the English Cabinet in meeting the difficulty which arose between the necessity of putting an end to the horrors of war and the fear of Russian aggression. Other events of those years—which Mr. Paul calls the "fruits of Imperialism"—were the blundering policy pursued towards Afghanistan and its rulers, and towards the Transvaal and the Zulus. In 1880, owing to the weakness of age and the threat of growing troubles in Ireland, Beaconsfield dissolved Parliament, and the General Election brought in the Liberals, or rather Gladstone. The ex-Liberal leader had made himself indispensable by his Midlothian campaign, and, coming in on a programme which was mainly negative, he presided for six years over a Cabinet which was never unanimous. The greatest triumph of those years was the passing of the Land Act for Ireland, and the greatest disaster was the loss of the Soudan and of Gordon. It seems that Beaconsfield might have had Egypt for Great Britain when he acquired Cyprus, and Mr. Paul thinks all our troubles in that country arose from the refusal to disintegrate Turkey. The features which partly serve to lighten the gloomy picture are the restoration of confidence in Afghanistan by the reversal of Lord Lytton's policy, the extension of the franchise in 1880, and the measures of social reform which Parliament passed under both *régimes*. Of Mr. Paul's style we have nothing new to say. There is the same chronological treatment of events which makes awkward breaks in the narrative, to be cured only by pursuing a subject with the help of the index. There are the keen passing criticisms on men and measures dealt out impartially to all, the same clearness of style which makes the book so useful to those who are just too young to have followed these events with their own eyes. Much the same space is given proportionally to ecclesiastical affairs and to literature, but there is not so much matter to treat as in previous volumes.

The Story of the Town of Reading. By W. M. Childs. xi.+242 pp. (Reading: Long.)—Mr. Childs, principal of the University College at Reading, has been for some time engaged in preparing a history of the town in which he resides. But he has here turned aside from his *magnum opus* to give the benefit of his learning for "the children of Reading," to whom he dedicates this little book. And well has he accomplished his task. There is not much left in Reading, we gather, of the mediæval town, but what there is is constantly referred to, and the young folk will be able, after reading this book, to walk about the streets with a new interest in their surroundings. They will also get a good idea of mediæval England, of the Civil Wars, and of modern industrial progress, by having these subjects linked with the familiar objects of their homes. Would that such books were available for every town!

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The Fighting Man of Japan. By E. J. Norman. xii.+ 70 pp. (Constable.) 2s. 6d. We are somewhat doubtful as to the immediate purpose of this book. It may have been written merely for general instruction in the training and exercises of the Samurai, or it may be meant as a kind of advertisement of the Japanese School of Ju-jitsu which is announced in a preliminary page. Anyhow, the reader will find here a good account of the Japanese methods, written by an old soldier who has been for many years resident in Japan, and the paper is highly glazed for the purpose, we suppose, of helping the many illustrations of ancient and modern Japanese in their athletic exercises which adorn its pages. Schoolmasters should study this subject with a view of adopting some of its best features into our schools.

Selections from the Writings of Lord Macaulay. Edited by G. O. Trevelyan. xi.+475 pp. *Selections from the Writings of J. A. Froude.* Edited by P. S. Allen. vi.+ 404 pp. (Longmans.) 3s. 6d. each. A leaflet accompanying these books quotes a recommendation by the Board of Education to teachers that they should read descriptions from writers like Macaulay and Froude, and the publishers have accordingly provided these two volumes. The editorial work has been confined to selection and the writing of a few notes. It has been well done, and only passages which are beyond criticism have been selected from these two brilliant but unequal writers.

A Descriptive Catalogue of Historical Novels and Tales. By H. C. Bowen. 40 pp. (Stanford.) 2s. net. The title describes the book. The information, which refers to all countries, is tabulated under centuries and subject, name of the book and author. In this way the teacher can choose those books which illustrate the subject of his class teaching. The catalogue was originally made in 1882, and is now brought up to date.

History of England in Three Parts. Part I., B.C. 55– A.D. 1485. By George Carter. viii.+292 pp. Relfe. 2s. Mr. Carter has improved. This latest production from his pen corrects [illegible] many errors, and is more up to date than his previous productions. It still retains the hard, mathematical style which gives one the impression that t[illegible] a collection of examination answers. We admire the [illegible] with the assistance of a good teacher [illegible]

[illegible]

[illegible]

[illegible]

ation candidates. Of the three books here me first is a new volume on the period of the Fre tion and Napoleon. Besides bibliographies tables of various kinds, and a sketch of the pe tains sixty-four model answers to typical que second consists mainly of date lists arrang portional order, and the third is extracted from larger book on the same subject to serve as put in the hands of pupils and lecturees. We mend them all.

Geography.

An Introduction to Practical Geography. Simmons and H. Richardson. 380 pp.; many and diagrams. (Macmillan.) 3s. 6d.—This ex comes at a psychological moment. The air graphy class-room is full of "regulations geography regulations of the Board of Ec secondary schools. These regulations especial "exercises" as part of any course which is t ultimate approval of the Board's inspecto Simmons and Richardson provide exercises sort, and plenty of them. The exercises lead menter up through his own experiments—i.e experience—to important geographical ger And these generalisations will "stick"; mo will *apply* to other like geographical conditions in a word, develop out what we believe Dr. was the first to call "applied geography," more utilitarian spirit designates "commercial Both authors have had much experience thems setting of practical exercises. Their choice is most instances, though here and there we thinl not erred on the side of leniency. Some of the map projection and on tidal matters strike us that we have no doubt many teachers will follow the advice in the preface on some of logical statistics, and regard them "as stor upon as occasion presents itself, and not as exercises to be worked by all classes." The to scheme of the book, which by no mea exercises only. Descriptive and explanatory most cases is added. There are four section pages with [illegible] short readings as Distances, Direction, Ordnance Maps, Hachure Scales, Measuring, No. [illegible] with The Globe, [illegible] "mathematical" geogr [illegible] Date, Day and Night, [illegible] No. [illegible] with Climate and No. [illegible] with No. [illegible] more particularly as the abode of man and [illegible] There are [illegible] of diagrams [illegible] the book in [illegible] small, but [illegible] of the purpose. There [illegible] [illegible] of teachers.

[illegible]

or and posterior "history"; the Russian entral Asia, admirably indicated by line upon lates; the contrasts of the "Far East" in 5, and of the African continent at different make this collection of maps more instructive hey are *per se*, the authors have inserted ogical summaries in many of them, a short Imperial countries and possessions, a note on s and most recent changes, a few statistical above all, a most valuable, because succinct, n the relation of geography and history. All geography, in default of purchasing, should or steal this excellent object-lesson of how oven are the two subjects.

Science and Technology.

Years' Course of Practical Chemistry. By Martin and Ellis Jones, with an introduction B. Cohen. First year. viii.+63 pp. 1*s.* 6*d.* viii.+51 pp. 1*s.* 6*d.* (Rivingtons.)—The authors has been to provide a three years' course based entirely on the practical work of he book is divided into three parts, the simple cesses, followed by researches on air and bstances in daily use, being considered in the The second year is devoted to the study of weight of elements and compounds as forming on to the laws of chemical combination and quations. The student is told what to do at each page, and expected to enter his observ- onclusions underneath. The authors properly the importance of encouraging the pupil to n conclusions at every step, though Prof. short introduction, writes of "that depressing elligent inquiry now known as the heuristic." ut help feeling that the use of such a book have mainly the effect of saving the teacher him to let the text-book do his work. The with such a book in his hands would rush to ge and turn to the next without ever stopping roperly the meaning and bearing of each step he receives no proper incentive to devise ex- himself or think for himself. Moreover, the ntering notes in printed books, though it may e of neatness, has a deleterious effect on the he boy to write intelligent accounts of what which is one of the main objects of elementary ing and such a valuable asset in later life.

in Quantitative Chemistry. By Harmon orse. xx.+556 pp. (Ginn.) 8*s.* 6*d.*—Prof. t has been written, first, with the object of e student's hands a working guide, sufficiently able him to work alone, and, secondly, to in- ficiency of the teacher by saving him waste of rt in repairing grosser mistakes. At the same ok is not intended as a complete guide, and en left for the teacher. In selecting exercises, aim has been to enable the student to acquire uantitative manipulation and a knowledge of ch will make it possible for him subsequently asily proficient in any of the several lines of analytical chemistry. Nowadays, when the to training in proper quantitative chemistry is rter than formerly, there is a great danger of doing little more than learn a certain number of analysis, and not paying that full attention minutest details, and acquiring that real sense of working quantitatively, which are the key to success. The importance of this is often not fully brought to the front in analytical text-books; Prof. Morse, however, does not fall under this error, and we should have no hesitation in placing full confidence in an advanced student who had conscientiously worked through this book. The opening chapters are devoted to the preparation of the instruments used, and deal with the balance, the barometer and thermometer, calibration of eudiometers and other apparatus, the measurement of gases and liquids, the determination of specific gravity and molecular weights. They contain a great deal of very valuable information clearly and concisely put. Subsequent chapters contain the analytical work proper, including the estimation of the halogens, sulphur, nitrogen, phosphoric acid, silicates, and carbonates, every attention being paid to accuracy of method. Other chapters describe analyses of a more technical nature, such as the determination of carbon in iron and steel, gas analysis, and butter analysis. The application of electricity in chemical analysis is exemplified by a chapter on the electrolytic determination of metals, whilst an account is also given of certain new electrical heating appliances for laboratory use and of a new electrical method for the combustion of organic compounds.

First Steps in Quantitative Analysis. By J. C. Gregory. vi.+136 pp. (Edward Arnold.) 2*s.* 6*d.*—This book is intended to provide a grounding in the fundamental principles of quantitative analysis. The first chapter deals with the estimation of the halogens and silver, including the preparation and standardisation of solutions for volumetric analysis and the description of a number of minor precautions to be observed. Subsequently the gravimetric estimation of the halogens and of silver as silver halide is described. In a second chapter alkalimetry and acidimetry are investigated, subsections being devoted to the use of indicators, preparation of pure sodium carbonate, and to the standardisation of sulphuric acid, sodium hydroxide, baryta and similar solutions and their uses. The third chapter deals with the use of standard potassium permanganate and potassium dichromate and the gravimetric estimation of iron; whilst chapter iv. deals with the preparation and use of standard solutions of iodine, sodium thiosulphate, and arsenious oxide. Finally, a few pages are devoted to general considerations; these might well have been placed earlier, as it is, for example, somewhat late in the day to learn that "if substances are not quite dry when they are weighed, error will be introduced." The book seems well adapted for advanced work in schools and for students working alone, though it is rather too diffuse in parts for the needs of students following practical courses under the guidance of a teacher. It is, however, full of practical points, and should be very useful to science teachers in schools.

Elements of Quantitative Analysis. By Dr. G. H. Bailey. x.+246 pp. (Macmillan.) 4*s.* 6*d.*—This book is of a more ambitious nature than most analytical text-books, and the author is to be congratulated on having put together in such a narrow compass so much useful matter. It should prove very suitable for use in college laboratories. The method of treatment adopted aims at cultivating manipulative skill, experience in selecting suitable methods, and judgment in minimising sources of error—all tending to cultivate resourcefulness and fitting the student to cope with the problems he will subsequently meet with in works' practice. In the earlier chapters the preparation and analysis of certain well-defined compounds are described, and a preliminary training in manipulation provided.

Subsequently the methods of volumetric and gas analysis are dealt with, followed by the consideration of methods applicable to the analysis of minerals. Part IV. is devoted to technical analysis, and contains sections dealing with the examination of water, fuel, materials used in the alkali industry, fertilising agents and soaps. It might with advantage have been extended to include a few simple tests for carbohydrates, &c., in food stuffs. A very valuable feature, and one not usually met with in a work of this size, are the notes in the appendix giving directions for the testing of reagents. The text is clearly printed and, so far as we have examined it, free from error.

Mounted Reptiles, Birds, and other Animals, for Object and Nature Study Lessons. (Thurston: 673, Romford Road, E.) 3*s.* 3*d.* to 11*s.*—The specimens submitted to us for examination by Messrs. J. R. Thurston and Co. include the hedgehog, weasel, kingfisher, lark, swallow, and tree-sparrow. They are all mounted in excellent style, and all have a life-like appearance. The prices are very moderate, especially in view of the satisfactory workmanship. The price-list, which accompanies the specimens, shows that this firm has available for immediate distribution a varied selection of birds and small mammals which should prove of great value to teachers of natural history. Where it is difficult to procure living animals for class demonstrations, or where with the live animal it is—as in the case of the hedgehog—troublesome to examine the external characteristics, these specimens will prove of great service. Schoolmasters and schoolmistresses responsible for school museums would do well to acquaint themselves with the stock of Messrs. Thurston and Co.

Elementary Physics (Practical and Theoretical). Third Year's Course. By John N. Brown. 111 pp. (Blackie.) 2*s.*—This book is intended to supply a third year's school course in experimental physics. The subject-matter includes experiments on the laws of motion, energy transformation, densities of solids and liquids, hydrostatic pressure, expansion of gases, solids, and liquids, change of state, calorimetry, hygrometry, and periodic motion. A number of simple problems is given at the end of each chapter. The experiments are clearly and simply described, and the necessary apparatus is fairly simple. The volume can be recommended for the use of students who require a short advanced course in experimental physics.

A Guide to the Electrical Examinations. By F. H. Taylor. 118 pp. (Marshall.) 1*s.* net (paper), 1*s.* 6*d.* net (cloth).—This work is primarily intended to be a book of reference for students who are studying electrical engineering or electrical science with a view of taking the examinations of the City and Guilds of London Institute or those of the Board of Education. In the first part of the volume all necessary details, including the regulations and syllabuses of these examinations, are given. The larger half of the volume is utilised in giving specimen answers to selected questions set in recent examinations. This portion of the work is scarcely satisfactory, since several of the answers, if given by examination-candidates, would fare badly at the hands of the examiner; thus, we read the following:—

Q. *A dip needle in England is loaded so that when disturbed it oscillates about a horizontal position. How will it behave when taken to the equator if the load is not altered?*

Ans. As the needle oscillates about a horizontal position, it proves that the load on the needle is exactly equal and opposite to the "inclination" or "magnetic dip" at the place where it was used. When moved to the equator, at which point there would be no "inclination" or "magnetic dip," the needle would, owing to its under the action of gravity, take up a vertical po

Miscellaneous.

(1) *The Schoolmaster's Year-book and Direc* lxv.+456+562 pp. (Sonnenschein.) 6*s.* net. *Oxford Year-book and Directory,* 1906. 764 (Sonnenschein.) 5*s.* net. (3) *The Cambridge and Directory.* 784+xv. pp. (Sonnenschein.) (4) *The Public Schools Year-book,* 1906. lxiv (Sonnenschein.) 2*s.* 6*d.* net.—(1) Unfortunately of the present issue of this invaluable annua hand too late to be noticed in our February nu editor has already placed us under many debt tude for the excellently arranged information he at our disposal in this scholastic "Who's Who hope that it will become increasingly popular in It is remarkably up-to-date, and provides everyt knowing about the educational events with whi (2) and (3) This issue of a convenient director brought up to date by the addition of many those who have recently graduated, the record other graduates of longer standing are dealt w first time, and fuller information concerning been added. This publication should prove (4) There are several new features introduced in what is now a widely-known book of refere prominence is given in Part III., entitled Efficiency in Public Schools," to an inquiry m editors of the annual. Six questions drawn u Roberts were forwarded to the headmasters of included last year in the year-book, and the a here tabulated, classified, and commented upon

The Law of International Copyright, w Sections on the Colonies and the United States By Dr. William Briggs. xx.+850 pp. (S Haynes.) 16*s.*—So many schoolmasters now books that an authoritative treatise dealing w relating to literary property will appeal to a la of our readers. Dr. Briggs considers his subj national copyright first from the historical poi and afterwards discusses the question on grounds. The third section of the work is c up with the conclusions arrived at by the Be tion, while two other parts explaining interna right in the British dominions and the p foreign authors in the United States respectiv with numerous valuable appendices, conclude a treatment of a very important subject. The sents a large amount of research and the exerc patience, and Dr. Briggs is to be congratulated he fairly describes in his preface as "the fi English on the Law of International Copyrigh

The Writers' and Artists' Year-book, 1906. (Black.) 1*s.* net.—This excellent guide to th of most of the periodicals in this country sho real assistance to teachers who indulge in liter in their leisure hours.

Practical Lessons in Singing and Voice Pro A. E. White (Singapore). 1–24 pp. (Murby. This booklet is the work of an enthusiast, a rules are given clearly. Perhaps in a second

uld give (no authors ever do) a clear and full her own difficulties and how she overcame them. ss should be laid, too, on the length of the road ood speaking or singing.

ries' Jest and other Plays. By A. H. Langdon. C. Hartog. 1–109 pp. (Sherrat and Hughes.) —Ambitious, no doubt, but excellent in execution, within the compass of a school or a well-to-do he plays give the child (a born actor) a chance, usic is simple and suitable. The work is, how- a nearer literature than such ventures usually are. he verses and speeches are excellent, and there is t over the whole. A good teacher would make a of such a book.

CORRESPONDENCE.

rs do not hold themselves responsible for the s expressed in letters which appear in these s. As a rule, a letter criticising any article or printed in The School World *will be submitted ontributor before publication, so that the criticism bly may appear together.*

ethod of Teaching the Atomic Theory.

. A. Whitton's letter in the December, 1905, f The School World raises an important and question. No one is, of course, entitled to claim as found *the* solution of the problem of teaching theory, but the following account of an attempt ation may prove suggestive and may serve the useful purpose of provoking that conflict of om which well-founded convictions eventually

ings of Mach and (in England) of Prof. Karl ave secured wide acceptance for the view that n of the concepts of science is not to represent " realities behind the veil of sensible pheno- ut to render possible concise and serviceable s of the phenomena themselves. In the present example, the terms " atom " and " molecule " not *discoveries* of chemists, but rather *inventions* of which the actual observed course of events economically described." Assuming the correct- is view, teachers seem compelled to accept the orollary that it is illegitimate to introduce the in question until their students have accumu- ass of first-hand observations sufficiently large ently concordant to make " economical descrip- nce desirable and possible.

cial object of this letter is to urge the further hat the terms " atom " and " molecule " may ed legitimately as instruments for the descrip- ts established in the laboratory long before the hese facts is so wide as to demand for their the conceptions of atom and molecule presented omary definitions. It is suggested, that is, that tive instruments should be modified as the facts h they are to operate become more varied in the form of the conceptions given in the text- king merely the direction which this process of t should take.

onvinced of the soundness of this practice, it icient to note that it imitates the process by nearly every case, the conceptions of science ed the forms that characterise them at the y. The atom and the molecule received from rs of Dalton and Avogadro *mass* determinations as facts accumulated they assumed *geometrical* determinations also, so that, finally, the " carbon tetra- hedron " and " stereo-isomerism " became part of the accepted descriptive apparatus of the expositor. Similarly, we have quite recently seen developments in the conception of the internal structure of the atom which have attracted too much attention to need more than a passing allusion. The teacher who rejects the anticipatory use of the terms atom and molecule, which I am recommending, might well be challenged to state the principle upon which he selects any particular stage in such a process of evolution as the correct conception which *ought* to be taught in our schools. If he replied that the conception of the atom which regards it as the smallest particle of an element that enters into chemical combination is all that is necessary to account for the facts of elementary chemistry, and is therefore the definition to be adopted, I should claim that his contention is, properly, indistinguishable from my own, and should invite him to show his consistency by admitting at a stage in the accumulation of facts earlier than that represented by the elementary text-book a still less developed con- ception of the atom.

A brief illustration of the application of this argument may be useful. Our students are beginning their second year's work with a repetition of some of the investigations that they have already carried out—partly for the sake of revision, but chiefly for the purpose of studying quanti- tative relations where hitherto only qualitative observations have been made. The behaviour of water and the common acids with the metals, and the relations of the oxides of lead, are among the matters which thus come up for reconsideration. In our endeavour to express as concisely as possible the facts which come to light, we gradually evolve an algebra which, besides serving this purpose, proves to be fertile in suggestions for further investigation. Thus when steam is passed over hot magnesium the crude formula which describes the reaction in the form

steam + magnesium = magnesium oxide + hydrogen

may pretty obviously be improved into

$$HO + Mg = MgO + H,$$

with a manifest gain in " economy of statement "; while at the same time such a mode of shorthand representation suggests the definite problem of analysing other chemical events into transactions between a limited number of " elements " regarded as present throughout.

When we turn to the action of sodium upon water, it is natural to suppose that the analogous algebraic expression

$$HO + Na = NaO + H$$

will represent the facts. But, if so, caustic soda should be an oxide. Thus a fresh investigation is suggested, with the object of testing the value of this hypothesis; and, contrary to expectation, caustic soda, when heated with zinc-filings, is found to yield hydrogen. It appears, then, that the hydrogen contained in water can be thought of as replaceable in two instalments, a result which we deter- mine to express by the form

$$H_2O + Na = NaOH + H,$$

while for the mere sake of consistency we admit the propriety of amending our first " equation " into the form

$$H_2O + Mg = MgO + H_2.$$

At this point the recollection that in the electrolysis of water two volumes of hydrogen appeared for each volume of oxygen suggests a further investigation under- taken to determine whether the two successively displace- able instalments of hydrogen are equal in quantity. With- out much difficulty satisfactory experimental evidence that this is the case is obtained. This result reacts upon the

meaning attached to our symbols. They can be thought of as possessing quantitative as well as qualitative significance, such a symbol as H_2 being employed to represent a quantity twice as great as that represented in the same equation by the symbol H. When we have accumulated a few more results of the same character, it becomes "economical" to elaborate a special terminology to deal with them. The term "molecule" is assigned to the "small mass" of substance under examination—for example, to the heap of lead peroxide in our combustion tube. The two equal "instalments" of oxygen which can be removed successively by heat and reduction are just as appropriately called "atoms." The results of our investigation of lead peroxide can then be summarised concisely in the statement that a molecule of it contains two atoms of oxygen and (apparently) one of lead.

The future development of the method will now be clear. The quantitative character of the conceptions of the molecule and the atom will undergo important developments (1) when it is found that the quantitative relations between the weights of the atoms of two elements in one reaction also characterise them when they enter into another reaction, so that, for example, the "atom" of oxygen and the "molecule" of water may economically be thought of as consisting of invariable relative quantities of these substances whenever the terms are used; (2) when, following up the observation we made in the course of our investigation of water, we find that the molecule of every gas—taking the term in the universalised sense just explained—occupies the same volume under standard conditions of temperature and pressure.

The teacher who shares Ostwald's dislike of hypotheses will stop here. He will hold that the conceptions of atom and molecule now reached are sufficient to perform the only task that we have a right to expect of them—the "economical description" of the facts that have been established. For the strengthening of his faith such a teacher may be referred to Duhem's "Le Mixte et la Combinaison chimique" and Prof. Divers's address to the Chemical Section of the British Association in 1902, which are both full of interesting criticisms invaluably suggestive to the practical teacher.

If, on the other hand, he is loth to abandon a metaphysical conception that dates from the beginnings of Greek culture, he has to add only one more determination to our conceptions of atom and molecule. The most natural way to approach this final elaboration is, perhaps, to show from physical considerations the plausibility of the supposition that equal volumes of all gases under the same conditions contain an equal number of ultimate parts, and to restrict the name "molecule" henceforward to those parts.

T. PERCY NUNN.

Cricklewood, N.W.

Parallel Straight Lines.

MR. GODFREY'S letter on the above subject in your January number distinctly implies that proofs of the necessary theorems, from the direction definition of parallels, cannot be both rigorous and simple enough for the average schoolboy's understanding. In the interests of progress, such a suggestion should not be allowed to pass unchallenged. If the definition of direction is sufficient, the theorems are both simply and rigorously proved. The method which I have adopted is to define both *same* and *different* direction of two lines as follows:—

"Straight lines in a plane have the same or different directions according as they make with any third line whatever (which they meet) equal or unequal angle the same parts."

For a pair of straight lines to have simultan same and different directions is a contradiction the definition is therefore equivalent to a state pairs of co-planar lines are divisible into two clas

(1) Those which make equal angles towards parts with every third line they meet—parallels.

(2) Those which make unequal angles, &c.—non

Quite young boys can grasp this distinction a they can use a protractor properly. The adva the definition are:—

(1) The definition is complete; Euclid's require late to bolster it up.

(2) The definition gives the positive property quently used, instead of a negative property. is useless until the former has been derived from

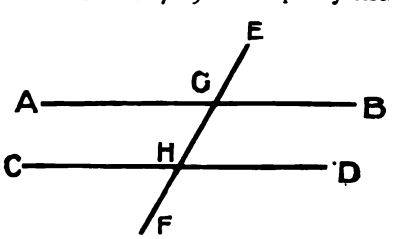
(3) The set-square method of drawing parallels immediately from the definition, so that prac parallels (*e.g.* division of lines into equal part gained before the theory is attacked.

(4) The distinction between parallels and no can be treated practically without any knowled theory. It is impossible to verify Euclid's or postulate directly. The difference of the two defi this respect is at once seen from the following exa

Draw a vertical line 2″ long near the left of t a horizontal line at one end, and a line at an angle of 88° at the other. These do not meet for of nearly 60 inches; but any line crossing them an appreciable difference of angles (2°) towards parts.

(5) The proof that parallel lines do not meet in which follows at once from the definition, additional most useful property: "Two parallels a common point coincide." With Euclid's parallels cannot coincide.

The proofs of Euclid I. 27–29 are simplicity itse



(1) If alternate angles are equal, then angl alternate angle AGH = opposite angle EGB, $GHD = EGB$, same parts; $\therefore AB \| CD$.

(2) If $AB \| CD$, then angle $GHD = EGB$, sa = opposite angle AGH, *i.e.* angle GHD = altern AGH.

The opinion of teachers who have used the definition is unanimous in its favour. For rigor ment it is only necessary to make the original sufficient, as suggested above.

The one difficulty is the proof that non-par meet. (Required first for the construction of ci of a triangle.) I have given a simple proof depe on I. 5—(2) above—and the assumption that the continually bisected angle may be made less finite angle (Archimedes's axiom of magnitude). so difficult for boys to understand this as for then the necessity for Euclid's or Playfair's postulate.

I quite agree with Mr. Godfrey that proofs direction definition may be unsatisfactory. The

I. 32 is a case in point. This cannot be made without (1) (2) above, and with these the ordinary very much the simpler and more instructive. these the same method makes the sum of angles erical triangle equal to two right angles, and efore be illogical. It is, in fact, difficult to make of fundamental rotation theorems as applied to h simple and rigorous; and rotation as a geo- ethod only becomes really useful after a good of congruent and similar figures has been

connection, it is unfortunate that the Cambridge should encourage the use of rotation by giving as ion: "The sum of exterior angles of a polygon angles," a property which is never required, and ays true; instead of "The sum of angles of an $2n-4$ right angles," which is always required ays true.

I ought to mention a further difficulty which en solid geometry is attacked, viz. the definition l planes. I have in this case defined them as lar to the same line (one line is sufficient). The orems follow quite simply and easily.

field. E. BUDDEN.

finition of "direction" which Mr. Budden offers ound to contain a latent theorem. This is as

o straight lines make equal angles (towards the ts) with *a certain* transversal, then they make les with *any* transversal."

who endeavours to prove this theorem will find pends on Euclid I. 32, and thus, ultimately, on of the axiom of parallels.

ystem of geometry that in any way resembles involves, in some form or other, the axiom of This was proved, once for all, when Lobat- worked out a system of geometry based on axioms *minus* the axiom of parallels. The ures of this system were:—angles of a triangle two right angles, non-existence of similar figures, of a triangle the three vertices of which are at xistence of real circles with imaginary centres, &c. schoolboy in ten thousand will ever hear the Lobatchewsky; but no system of Euclidean geo- t ignores the parallel axiom can be called perfectly

be sound enough for the purpose of school- but this is a pedagogical, not a mathematical and doubtless there are many axioms that even sumes without statement.

C. GODFREY.

oetry and Music in Secondary Schools.

living in an age when the aim of education is oys and girls with a view to the practical needs d one is almost inclined to fear lest the chemical , the workshop, and the general investigation the working up of, the substances of things should drive away from our minds the cultivation s. At the outset, we should like to ask whether ntion could not be given to the proper study of music.

ding of English literature in schools is generally with a view to an examination, and while the of the examiner, though often dealing with points clusively belong to the province of English serve a useful purpose, yet this constant reminder of the examination behind so much of the study done by boys tends to the undertaking of such work less for Art's sake and more for the examiner's.

As regards music in day-schools, in spite of the oft-quoted statement that nearly all boys can be taught to sing, not much good comes from singing which is taught indiscriminately to whole classes of boys, who are grouped together not for musical ability, but for their proficiency in ordinary school subjects.

The presence in a class of thirty or forty of two or three boys who have little idea of producing a musical note, or with only a slight interest for music, serves to demoralise the whole class, and should therefore be avoided. Singing classes should be so arranged that the attendance of the boys at them is optional. So far as learning to play a musical instrument is concerned, unfortunately the amount of practice required to obtain anything like proficiency generally discourages the average boy, who likes to devote a good deal of his time to cricket and football, and grudges the hours spent in practising alone on the piano or violin. In boarding-schools, where it is nearly always the rule to have a voluntary choral society, singing is carried on in a truer spirit, and in a way more productive of good results.

If dramatic poetry were studied with the object of being acted on the stage rather than with a view to the examination; if lyrical poetry were associated more with musical settings—the kind of music, perhaps, that Sir Hubert Parry has lately written for some of the gems in English lyrical poetry—what an incentive towards a true appreciation of all that is best in literature would be given! The fact is, there is at the present day in many schools a neglect of learning by heart specimens from the great writers in English prose and poetry, a fact which contributes largely to the general failure of boys to express their thoughts in grammatical, to say nothing of good classical, English. What is the reason for this apparent indifference to making boys thoroughly familiar with the best writings of great authors, when it is generally admitted that good essays cannot come from a mind which is not furnished with a proper store of the ideas of great writers clothed in their own perfect language?

Practice appeals to the active mind of boys sooner than theory, and studies of the men and events of past ages are made more real and interesting when compared or contrasted with those of the present; so, if the plays of Shakespeare or portions of a play were systematically put on the school stage, as great an interest would be aroused in the actors and audience as would be found among boys who could be taught to play on stringed instruments an easy symphony, or some incidental music composed for a dramatic representation, or to sing a four-part setting of some of our beautiful English lyrics.

This combination of dramatic and lyrical poetry with the stage and musical instruments is just what is most needed, for it brings, as it were, the past into touch with the present, and turns ideas into realities, two things which we have said appeal to boys' minds. We should like to know that every school has its dramatic, its choral, and its orchestral society, which should all work together for the common aim of school entertainments, and nothing but selections from the best works in prose and poetry should be tolerated on such a stage. Thus their more intimate acquaintance with English literature would improve the essay-writing of boys, the acting of plays would make their reading aloud more intelligent and distinct, and they would be brought more under the refining influence of good music.

Aske's School, S.E. C. A. F. GREEN.

Work before Breakfast.

IN your January number, Dr. Clement Dukes wrote condemning work in schools before the scholars had breakfasted, on the ground that the vital powers of children become greatly depressed after long abstention from food. This no doubt is true, and applies to young people of all classes in the community.

But if it applies to the well-fed at a certain time in the twenty-four hours of each day, how much more must it apply to the underfed children of our large towns, to whom the before-breakfast period may extend through the morning session of a "provided school"? To press information upon a child with a starved stomach is not only useless, it is harmful, as it injures the brain and deprives the child of power to acquire knowledge when it may have reached improved circumstances.

It seems to me that schools that take underfed children should be reported upon periodically by the medical officer of health, and the children unfit for the curriculum removed to a separate school where feeding was the preliminary to instruction. The lessons for these children would well be replaced by rest, and the mental condition recreated by a story-book.

This was the plan adopted in the school started by Deacon Abraham in the Armenian famine, for the children suffering therefrom in 1882. A few months of this gentle hospital treatment now would probably save the children from years of suffering in after life. Certain physicians are said to have lately reported that short hours of sleep are a definite cause of intellectual inefficiency. Is not semi-starvation also a cause as potent to produce intellectual inefficiency?

H. DE NOAILLES.

Military Training in Schools.

As a constant reader of THE SCHOOL WORLD, though merely an amateur educationist, I venture, greatly daring, to enter the lists against "H. G. A." I hope he will not take it ill when I say he has plainly lost his head in his hot haste to demolish Lord Roberts. I am not going to deny that Lord Roberts, in his professional enthusiasm, may also have been carried into the regions of idealism. But I would like, sir, with your leave, to say a few words as a true lover of peace, and as one who has had, in his own family, the terrible, though not, thank God, the fatal, experience of the horrors of war.

In discussing this subject, let us assume two propositions as settled: first, that in these days of compulsory *mental* training a corresponding compulsory *physical* education is absolutely essential for health. I am on my own ground here; and, as a physician of nearly fifty years' experience in his profession, I do not think anyone can deny the truth of this assertion. Secondly, it is, I take it, equally true that the country *must* improve its means of defence. To obtain the power of protecting ourselves sufficiently, and yet economically, we need a comparatively small, but thoroughly efficient, army of professional soldiers, and an ample reservoir of men so far trained that they may, at the moment of danger, be able to take, with or without much further drilling, their place in the fields of war. So much being taken for granted, I ask: What is the best means for these ends? and unhesitatingly answer: Cadet corps in our secondary, and shooting and drill by means of evening continuation classes, from the age of fourteen to eighteen, in our State-aided elementary schools.

Political or apparently Fiscal Objections.—I do not think it is necessary to argue "H. G. A.'s" point, because it is so plain that of all projects for national defe absolutely the cheapest in its probable demai public purse.

Moral Objections.—Here "H. G. A." is contradictory. He does not object to Militia teers, but he is against teaching our children to at school. As if, forsooth! every boy worth the not at heart a soldier as soon as he begins to c

As a nation we should grow up all for war ing. Are the Swiss, as a nation, warriors in On the contrary; have they not over and over a themselves ready to sacrifice their prestige—I said their independence—for the sake of peace our Colonies and their appreciation of militar Do they want to fight without reason? Wou be the first to suffer in a continental war, a not know it well?

Soldiering would discourage the Entente Co what of the reception our soldiers got lately Germany, and America? Were they not the re of English power and English fighting resourc welcomed as comrades?

All this is, however, not the real question "H. G. A." Physical training is abhorrent others, because the very idea upsets their notions and disarranges their time-tables. But is at last roused to its supreme danger, and master must wake up and not stand in the way but give the best help he can to his parliament and to *their* masters—the public at large.

Dingwall, N.B.

Bookkeeping as a School Subject.

THE contribution in your last issue on "] as a School Subject" is very opportune. M shows that the subject possesses value as mental development, and therefore has some place in the school time-table. The Board of however, in a recent letter states that it does it a suitable subject for a secondary school. instructive to have the views of your read question.

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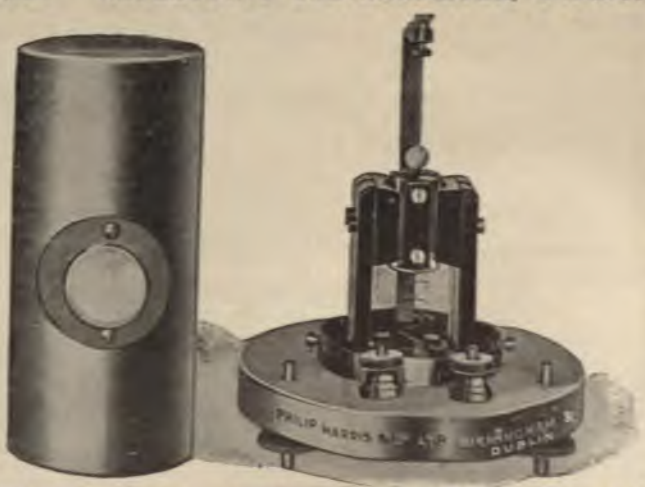

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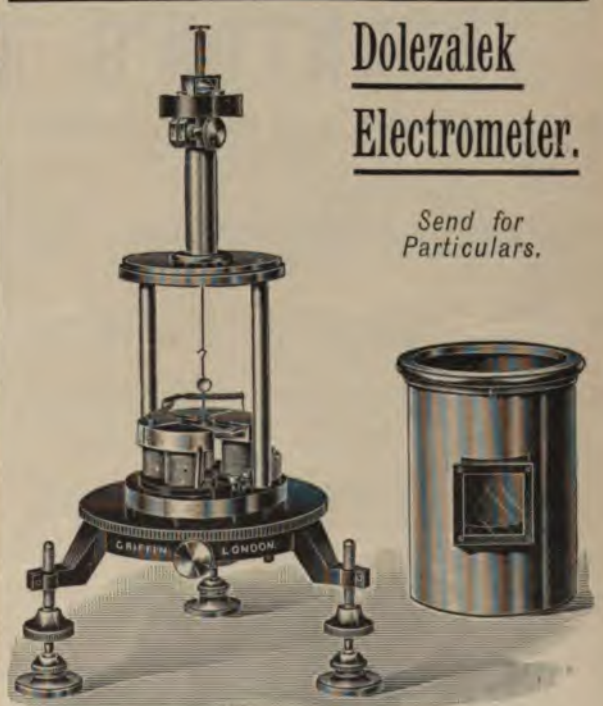

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reform, there is one scheme which can be ...sally adopted, and at once, which has ...y been adopted in several schools with ...ent results, viz., that every boy while at ... should be taught to drill and to shoot. ... do not mean to imply that the universal ...ion of this measure will settle for ever the ...on of Army reform, or even of universal ...e; we do not think that schoolboys, or ... members of rifle clubs, lying with rifles ... hedges, can protect England against the ...r; but what we do anticipate is this: that ... Englishman shall have learnt so much of ...ill and of the use of his rifle at school, that ... the time does come for him to serve as a ... (whether he does so voluntarily or under ...lsion does not much matter), he will make ...nly a better soldier, but he will become ...pfähig" in half the time, and with half ...rouble and expense both to himself and ..., which he would otherwise require. The ... argument applies to rifle clubs. It has ...mockingly suggested in many papers and, ...eve, even in the House of Commons, that ...nbers of rifle clubs, as such, were to take ...ld against an enemy, they would be liable ...hanged on the nearest tree. Of course they ..., and quite right too. What the rifle clubs

...he field at all, but to give ...wledge of the rifle that he ... soldier in the minimum of ...mum of trouble.

...l and shooting in schools ... those who support and to ...ersal military service; for ... rejoice in the fact that it ...aining easier by commenc- ...atter will be able to con- ...hat (in consequence of a ...ned men being available) ...al service will be postponed ...erhaps indefinitely.

...ave attempted any military ...esent have mostly formed ...s affiliated to the local ...ll very well for the great ... boys stay till eighteen or ...ord to pay for uniforms, ...ake for grammar schools, whose boys leave at fifteen or sixteen and can sometimes barely afford clothes, much less uniforms. It is indeed surprising how wedded scholastic and other authorities have become to the idea that uniform is necessary for the military instruction of schoolboys. I note in THE SCHOOL WORLD for last February the following (H. G. A.'s letter, p. 80):—"The stimulus of a uniform, which one headmaster, speaking after Lord Roberts, said was attractive to every healthy-minded man, would be found essential, or be thought to be essential." This is a great mistake, and it has given H. G. A. the opportunity of placing difficulties in the way of military training. Again and again, in public and in private, I have had opportunity to combat the idea, "no military training without uniform," and many schools who are really unable to support a uniformed corps have attempted to do so, and found that they have undertaken too large an order.

When, in 1900, we at St. Dunstan's College began teaching all boys to shoot and to drill as a battalion 300 strong, one of our rivals in cricket and football started a cadet corps. We challenged them to a shooting-match, and that challenge, often repeated, has never yet been accepted. At length the headmaster was pressed to give his reasons for declining the challenge, and we

received the reply, "We have spent all our money on uniforms, and cannot afford ammunition."

The advantages of non-uniform are as follows:—First, the question of expense; and this not only facilitates training for those who cannot really afford it, but cuts the ground from under those parents who, while their real reason is indulgence to the wishes of the boy, would make the expense an excuse for withdrawing him from military training. The conscientious objectors, the parents of the poor boys who have no appetite (? tuckshop), do not withdraw their sons from drill in mufti, but would not pay for uniform if it cost half-a-crown. In short, drill without uniform can be made compulsory for all; with uniform it must be voluntary, and fails to include those boys to whom it would be of the greatest advantage. I think, myself, that there is another side to the question. Surely the object of uniform is to form the fighting unit, regiment, battalion, or whatever the corps may be. Now schoolboys are to learn, but not to fight. I would almost go so far as to say that the present fashion of putting schoolboys into uniform is actually an obstacle rather than a facility in the way of military training.

For schools where a uniform is undesirable, a miniature rifle club affiliated to the N.R.A., and battalion drill officered by boys, possess such enormous advantages over a uniformed corps that it is difficult to imagine why any of them should ever have been induced to copy the great public schools in forming uniformed corps. To show how easily and inexpensively this may be done is the object of this paper. The subjects of (1) shooting, (2) drill, are conveniently taken separately.

Shooting.

The first step to be taken is to decide upon the place for the range. Twenty-five yards is a suitable distance; ten or fifteen is enough for a beginning; fifty is as much as anyone can want. The more out of the way the better, and any odd corner hitherto available only for mischief is the best place for its construction. Some kind of wall or bank at the target end is necessary, and against this some kind of butt must be placed to stop the bullets. The Morris Tube Co. provide butts of timber backed with steel plates, size 7ft. × 3ft., costing £3; but for a cheaper butt four inches of earth or gravel between boards does just as well. Old railway-sleepers are equally effective. Having decided upon the range, the secretary of the National Rifle Association, Bisley Camp, Brookwood, Surrey, should be informed; the district inspector of musketry will then visit and pass the range. This should be done before any other step is taken, as the advice obtained may be valuable.

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A *Morris tube* is a tube fitting the entire of the barrel to enable a small cartridge small bullet to be fired. This cartridge is as ·297/·230. The "short" cartridge cos 15s. 6d. to 20s.; the "long," which is deal more accurate, 22s. 6d.

The Morris tube has been by far th generally used for teaching shooting, b is only because it enables the service wea be used for short ranges. By its mea soldier can have his service rifle, or the man his shot-gun, converted into a mi rifle for barrack-yard or indoor practice; a school which does not possess service but must buy its rifles expressly for the in view, it is much better to obtain mi rifles.

Miniature Rifles.—These may be had either the ·297/·230 or the ·22 cartrid smallest rifle cartridge made. Now the has the advantage not only of being ver cheaper—10s. to 12s. 6d. per 1,000—but being very much more accurate than the ·2 I should therefore have no hesitation in a any school to go in entirely for ·22 rifles, b care must be exercised in selecting them. rifle can be bought for 10s. 6d., but suc are mostly toys, or, being intended as r rabbit rifles, they have been made as li possible. If the rifle is to lead up to the weapon it should not be too light or too it should be seven or eight pounds in we least, and it should have military sights military sight may be, and probably is, in accuracy to many other patterns, and looking anxiously forward to its improv but while it remains on the service rifle it certainly be adopted by the rifle clubs. A which is in all respects a facsimile of the rifle, but taking the ·22 cartridge, has ju put upon the market, I believe by the This was offered to me last October for and a few days ago for £4 5s. If I were ing new rifles I would certainly get o unless it can be sold for about £3 3s. probably be out of the reach of school clu

Approximate cost of other rifles:—Ligh chester or Martini, from 12s. to about £ Stevens's "Ideal," £3 8s.; Stevens's vourite," £6 5s. Martini-Enfield rifles r obtained from the N.R.A. at 38s. each, can be fitted with Morris tubes at 22 each.

The War Office supplies six service c ready fitted with Morris tubes for £13 1. My experience is that these carbines a accurate than rifles.

A committee of the War Office is at sitting to decide upon a standard patt miniature rifle for schools. It is understo

commendation will shortly be published.
ount of this rifle appears in the *Field* for
10th (p. 376).
N.R.A. is willing to make a grant up to
e of £13 16s. 6d. to any school starting
club, provided that the school produces
amount, and that the grant be not ex-
in ammunition but in preparing the range
ing rifles.
N.R.A. is at present considering the pos-
of giving a week in August at Bisley to
formed secondary schools. If this is done
put the coping-stone on our work; nor
thing more be desired than that those
ve practised miniature shooting during
should have a week on the Bisley ranges
st, only the N.R.A. must lend us the rifles
purpose.
ts.—The standard target adopted by the
for twenty-five yards is as follows:—
ye, 1in. diameter; inner, 2in. diameter;
, 4in. diameter; outer, rest of target, 6in.

measurements would be doubled for fifty
halved for twelve and a half yards, and so
argets are sold at 1s. 6d. per 100 for the
ll, and 5s. per 100 for the 2in. bull.
ing.—It is of the greatest importance in
that the position of every shot shall be
, and I am inclined to think that it is
r boys not to have the marker's mantlet
line of fire; boys are too careless to be
in such a mantlet. Some recommend a
ar at the firing-point, but with this it is
to tell the difference between a bull and
The best arrangement is for the marker
a shelter, made of the same materials as
t, to one side of it, and for him to come
ront of the targets to mark, the following
ing rigidly enforced:—"Every rifle after
nust have the breech open." It is the
the instructor to see that this is done,
y then to give the signal by whistle or
se for the marker to leave his shelter.
beginners, the instructor has to be
of phonograph grinding out, "Open
eech. Open your breech." But after a
or two the practice becomes automatic,
ery boy's hand goes naturally to bolt or
rectly his eye leaves the sights. Magazine
ating rifles should in no circumstances be
on the school range.
eful thing for teaching is a sandbag sup-
on a tripod, on which the rifle remains
position in which it is put. The beginner
ljusts the unloaded rifle on the sandbag
he thinks is the proper position, so that
ructor, looking along it, can see if back-
oresight, and bull are properly placed re-
to one another, and no one should be
to fire until he has done this to the
or's satisfaction. Four beginners or six
xperienced boys are as many as any in-
can manage. Shooting should be first
in the prone position and afterwards kneel-
ing; it is questionable whether the standing position is worth teaching at all.

Besides shooting at the ordinary target, which, however, is far the most popular, we have introduced the following by way of variety:—

Telaramic Targets.—These are sold by the Telaramic Target Co., 3 Barronstrand Street, Waterford. They are small pictures of men, horses, &c., giving at twenty yards the apparent size at 200, 500, 1,000, &c. They take a lot of hitting.

Disappearing Targets.—Any arrangement made in the school carpenter's shop by which a target can be made to rise and fall behind an iron plate faced with wood.

Team Firing.—This is a good thing for a "show" day. Both teams fire simultaneously and as fast as possible at little wooden figures, each of which represents one man of the opposite side. When any figure is shot down, the man represented by it must retire.

Unknown Ranges.—The simplest way to simulate unknown ranges is to put a false foresight on the gun—a nail stuck through half an inch of rubber tube answers very well. The beginner then learns to slide the sight bar up and down until he finds the target.

Cost.—We are now in a position to estimate the approximate cost of introducing proper instruction in rifle-shooting.

Capital Expenditure.—£10 from the school *plus* £10 from the N.R.A. This should provide the range and from four to six rifles.

Annual Expenditure.—6,000 rounds ·22 ammunition, £3; targets, 15s.; cleaning materials, 5s.; affiliation fee to N.R.A., 10s.

The cost of instruction will be whatever the school is able to afford. Since drill is already in all their schemes, it will probably not be very difficult for the drill-instructor to take up the rifle-shooting as well. It is not a difficult subject for an assistant-master to take up, and if it could be made the means of a small addition to the miserable salaries which so many assistant-masters receive, the school would not be very much the worse.

It is not necessary to make shooting compulsory; boys are so keen on it that they rarely miss their shooting lesson. Ever since 1900, we have had all boys over fifteen in the shooting-squads, and those below that age have been allowed to join as a special privilege for good work, good play, or other good behaviour in the public service. The shooting is never allowed to interfere with games. We find that it is very convenient just after midday dinner, when there is an hour or so devoted neither to work nor play. The question has been asked whether every boy shoots. By arranging that every boy over a certain age can shoot we ensure that the boy who completes his education shall have learnt the use of the rifle. We do not teach shooting to boys of nine, because we assume that they will be able to learn it before they leave school at fifteen.

Can rifle-shooting be taught with air-guns?

Well, it is better to shoot with air-guns than not to shoot at all, but boys do not take so much interest in it as not being "the real thing," and nothing like the same accuracy can be obtained. Last summer we tried the following experiment:—We arranged the best eight shots in two teams as equal as possible, and then shot a match: air-guns at ten yards on a 1in. bull *v.* rifles at fifty yards on a 2in. bull. The following were the scores (h.p. 35):—

Air-guns.		Rifles (Morris tubes).	
A	19	W	21
B	24	X	30
C	27	Y	25
D	19	Z	27
	89		103

Air-guns (ammunition about 1s. per 1,000) might be useful as a preliminary to miniature rifles, but could not replace them.

Drill.

The development of a system of drill for schoolboys has been entirely the work of the Rev. C. G. Gull, late headmaster of the Grocers' Company's Schools, Clapton, and anyone who has seen his boys drill must admit the excellence of his work. As a rule, drill is not popular with boys, and it is difficult to get them to take it seriously. Their attention is so easily distracted, and the passing of a bird or the approach of a sheep is sufficient to throw them into the wildest excitement. Mr. Gull had certainly got over this. On one occasion I saw his boys drilling on a common when a football, which was being kicked by some outsiders, rolled to the feet of a company. Not a single boy took the slightest notice of it—a fact which speaks volumes for the earnestness with which they drilled. Boys will certainly drill better if they are given a dummy rifle to hold, and it is probable that a band will considerably improve the marching. Boys find more interest in open-order than in close-order drill, and it certainly encourages more independent action among the officers.

The question of finding time during the school hours we settle as follows:—During the two winter terms we do no battalion drill, and our afternoon time-table is: first lesson, 2.30 to 3.30; second lesson, 3.30 to 4.30. During the summer term, whenever the weather is suitable, we have: first lesson, 2.30 to 3.15; second lesson, 3.15 to 4.0; battalion drill, 4.0 to 4.30; and we find that we make this change, on an average, about two days a week.

Our drill is wholly officered, even to the commander, by boys; assistant-masters and the drill-instructor help, but their duty is to assist the officers who are to give the words of command or the signals themselves. The officers carry singlesticks, and the rank and file dummy rifles of wood costing less than 1s. each. We do not go below boys of twelve, but we bring into the field a battalion of five companies of sixty each.

The cost of forming a band is approxim:

3	Side-drums	£8
1	Bass-drum	6
12	B Flutes at 10s. 6d.	6
2	F Flutes at 15s.	1
1	Piccolo	
1	Triangle	
		£23

Less discount, the amount is about £20. a considerable item, but every schoolmaste that people will pay for music in comparis other things in the proportion of the sacl bread in Falstaff's tavern-bill.

The battalion movements which we ca are as follows:—

Close Order.—The companies, havin formed up and numbered, form fours, an in fours to the parade ground, advance fro into column, form into line, advance an in line, present arms, advance *en échelon*, column, form column of half-companies, tions, re-form column, march past, an square.

Open Order.—No words of command, directions given by whistle and signal. ing and closing on centre, right or left, ad and retiring at the quick or double, lyin and rising, changing front.

The above list is not intended to be exh It can probably be extended and improv represents a moderate standard at whi school can aim. Whether boys who hav through the above course would be of any to the country from a military point of must leave for others to say. The chief have noticed, speaking solely as a schoo is that, by observing how boys carry c duties of an officer, one can ascertain wh are able and likely to exercise authority, a pick out boys likely to make good prefect if they are not among the best scholars.

As this paper is addressed to believers have preferred not to enter into any arg on the question of the advantages or dra of military training, but I cannot help ma short reference to the letter of H. G. A. School World of February last. H. thinks that to have men trained to arm encourage among the people a demand fo I should myself think that most people wo less likely to urge on war if they knew tha might have to do the fighting themselves if they thought that they could pay oth do it for them. I am only judging oth myself; probably H. G. A. is doing the if my views are possibly those of a c H. G. A. must be a lineal descendant Irishman who sent his little girl out to there was to be a fight, "'Cos, if so, would like to be in it."

EQUIPMENT OF A SCHOOL MUSEUM.

By Oswald H. Latter, M.A.
Charterhouse.

adays generally recognised that the n is a necessary part of the educational ery of a school. Inasmuch as the e intellect and reason is made solely eye, it will be convenient, first, to con- quirements of the building itself, in ts contents may be seen to the best Above all, then, it is necessary that be admitted. This is best secured by top-lights, not in the walls and near at in the very roof itself; in the end- r windows are an advantage, but the hould offer as much show-space as urther, in order to bring every square all area within easy view, there should rail-gallery with an open (gridiron) g all round the room, if the height of anything over fourteen feet from the us utilising to the utmost the whole of e wall area, the floor is left clear for a nd important show-cases, and the un- pearance of an overcrowded display is parquet is preferable to a boarded ng more free from vibration and also e tread. If the museum is much fre- is to be hoped, there will inevitably be to the floor a certain amount of dirt, fairly frequent sweeping, and the unless prevented, of that pest of all lust: dust which will settle upon every ce, and will find its way into the ly closed case, causing hours of labour e school servant and to the skilled naster-in-charge. This nuisance may gely reduced by applying to the floor aration, "Florigene," obtainable from layer Co., 165 Queen Victoria Street, C. The entry of fine dust into pro- t-proof cases is best obviated by having se a hole of reasonable dimensions ich there is an easy passage for the ole must be well filled with cotton- will act as a dust-filter, and allow the hrough purified. By affording a wide r-passage to the currents which are consequence of changes of tempera- vements of air through the hinges and w junctions are practically prevented, ist enters only through the trap, in ecurely arrested.

the main room of the museum, and floor (the ground floor is best), there t least one fair-sized and well-lighted nd storeroom. Specimens can seldom their right positions immediately they , and often they need a more or less paration, which can only be bestowed minutes here and there by the master- isually a man with a full complement lass and laboratory work to attend to. Hence, a room where the specimens can be left undisturbed between the periods of work is an absolute necessity. A second workroom for the pupils is also of enormous value, and may conveniently be the headquarters of the natural history club. This institution ought to be the chief contributor to the museum collections, for, though names and addresses of firms from whom specimens can be purchased are given below, the exhibits should, as far as possible, be the result of work done in the school itself. There is no surer way of securing interest being taken in the museum than to get the pupils themselves to spend time and thought over its embellishment. That which has cost nothing is only too often lightly esteemed.

Though the practice of defining an object by stating what it is not is generally to be condemned, yet in the present instance it is very necessary to insist that the museum is not, and must not be, a mere miscellaneous assemblage of curiosities, abnormalities, and other specimens—the abandoned hobbies of munificent donors. There must be a definite aim and principle of selection, to which the responsible master or mistress must rigidly adhere, even at the risk of discouraging presentations. No curator can have been long in office without experiencing the painful necessity of saying "No, thank you," to the offer of some collection, perhaps of real value in itself, and appropriate enough in some other museum, but entirely out of place in that of an English school. A notice of "No rubbish to be shot here" is at times a tempting placard for the museum door, but the implied discourtesy may perhaps be avoided by posting, in some conspicuous place, a list of objects of which the museum is in need, and on which intending benefactors may expend their generosity with advantage. It is also convenient to reserve for "recent additions" one case, in which unsuitable gifts may for a time be displayed before being consigned to their proper place!

What, then, are to be regarded as the proper limits of a school museum? First and foremost, I would insist that, with very few exceptions, all specimens should be British, or, at any rate, such as occur in these islands, the qualification being intended to admit foreign examples of species that occur but rarely this side the Channel. Secondly, especial prominence should be given to the fauna, flora, and geology of the immediate neighbourhood. From these special instances as texts, the museum should preach an illustrated sermon on the leading facts and principles of the sciences of biology and geology. To take the strictly local first. The physical features of the district are best explained by means of a relief model on which the various geological strata cropping out are indicated by distinctive colours. The model should include all the country within, say, a radius of ten miles from the school, and should show clearly the courses of rivers and streams, and the "water-divides" if any such occur. The model can easily be made by the pupils themselves

from the data of the six-inch Ordnance map, though it will be necessary to construct the model on a more reduced scale to avoid undue bulk. In any case, the vertical scale must be considerably (about ten times) exaggerated as compared with the horizontal, or a disappointing flatness will result. Near to the model, the geological collections will find their natural place. These should consist chiefly of well-chosen petrological examples of the principal formations of the district, and of the fossils characteristic of each. The nature of each formation, its history, and the evidence afforded by its fossils should be set forth in plain, untechnical language. If space permit, there may be another geological case, arranged stratigraphically, in which a few of the more important fossils of each stratum are displayed, their structure explained, and their affinities with existing forms of life pointed out. It is a mistake to attempt to exhibit exhaustive (and exhausting) series of fossils. Complete collections are best placed in drawers, readily accessible, beneath the show-cases. Very excellent series of photographs illustrating the most notable geological exposures in this country have been issued by the British Association. They can be obtained from Prof. W. W. Watts, F.R.S., and fully deserve a place in every school museum. Each photograph is accompanied by a short and lucid description. They should be framed and glazed and hung on the walls in some suitable place. Portfolios are apt to escape attention, and their contents are liable to injury during inspection.

Passing to the botanical department, the *hortus siccus* must be condemned without reservation. However successfully flowers are pressed and dried, they are not then fit subjects for the school museum. A few well-preserved and dissected typical specimens set out, some dry, some "wet," and with the express intention of demonstrating the diagnostic characters of the more familiar orders of plants, are of more value than the most complete herbarium. The more minute features of the floral anatomy can be made clear by the aid of enlarged drawings, or of wax models such as those supplied by Mr. H. E. Smedley, 628 Green Lanes, Harringay, N. During the spring and summer months it is a good plan to have freshly gathered specimens of such plants as are in blossom placed in vases of water on a show-table in the museum. The flowers should be grouped according to their natural orders and genera, and each provided with a conspicuous label giving the popular and scientific names. It is best to use, for this purpose, a show-table such as those seen at flower-shows, *i.e.* with a number of holes pierced through it, so as to allow the stalks of the plants to pass into vessels of water kept out of view, and out of reach of accident, beneath the planking.

The various forms of climbing organs are also good exhibits. Pot plants of the creepers and climbers can be brought to a suitable size out of doors or in the greenhouse, and transferred to the museum for a few weeks, without serious injury to the specimens. At times, n friendly nurseryman might be induce good series. It will be necessary to ca to the nature of the climbing organ ir by means of a drawing and clearly-wo

Fruits, both succulent and dry, for museum subjects, and their modes of di readily be appreciated by young pupils general public, to whom, by the way, museum ought to be accessible at cer and, if possible, on Sunday afternoons. culent fruits must, of course, be e "wet" preparations. They may be 3 or 4 per cent. solution of the comme cent. formalin in rectangular, not glass jars with a glass lid. The fruit be held in position either by means of fine glass rods passed through it, or attached by means of india-rubber so sheet of thin glass or to a sheet o This last is very convenient material readily be cut to any size or shape t and when placed in the formalin solutic visible. The same treatment may also to seeds in the successive stages of g The glass covers of the jars can be fix tion by the india-rubber solution. (supplied in large sheets of various th Messrs. Fitch and Co., Seldon House, Rents, Holborn, W.C.

Turning now to the zoological sect the museum has a double function to p is certain, and quite rightly, to be used of reference by young naturalists who a to identify specimens collected in the their own hobby. Now, juvenile h things to be encouraged; apart from tl intellectual, and æsthetic value, whicl many a childish hobby has ere now foundation of solid work in after life, a gain to the stock of human knowledge ness. It is a reproach to our schoo many hobbies are but short-lived and good result either in their temporary or in the community. Why is it that Largely it is due to the fact that we d ciently encourage in hobbies an inter intellectual. The stage of collecting r jects from mere lust of possession is universal occurrence, nor is it any regret that this is usually of but brie But if, while this phase is dominant, lead our pupils to collect less, but s closely their specimens, we should proc results and earn the lasting gratitude The museum is undoubtedly the best for achieving this end. It is therefore not so much to accumulate complete col the classes of British animals, though be understood to discourage these, but procure a few representative examples arranged as to display the anatomica which are of value in the classificati several groups and in the determinatior and species. Further, by means of dra

iptions, the function of the organs and ral working of the animal machinery : made clear. In short, the zoological uld be an introductory text-book of com- anatomy and physiology, illustrated, as ssible, by the hand of Nature herself.

mple, the mammal collection might com- letons of a sheep, a fox, a rabbit, a , and a bat, together with a few well- ecimens, or perhaps good pictures if limited. Every bone of each skeleton clearly named, and attention directed m of the teeth, limbs, &c., as correlated diet and habits of each animal. A few ecimens will be necessary to show the nd working of the muscles and internal These can be obtained from Messrs. and Son, 313 High Holborn, W.C. mmals can, of course, be added in their te places as opportunity permits. And ay be remarked that the bats are best as "wet" preparations in formalin. er insectivores and rodents can be satis- "mummified" in vapour of formalin as —The freshly killed animal should be good attitude on a sheet of cork or soft the whole then placed in a biscuit-tin or rably air-tight receptacle, in which is to ucer filled with formalin of full strength. should be raised on a low support to from getting wetted by the formalin or ndensed liquid that may trickle down the e tin. In some cases it may further be to inject some formalin *per anum*, or he walls of the abdomen and thorax by a hypodermic syringe. The specimen left in the closed vessel for about one d may then safely be removed. A little ill enable anyone to insert artificial eyes,

Specimens thus treated are not subse- ttacked by moth or mite, nor do they indication of decay. The method has tage of preserving the fur of the animal ectly natural condition, entirely devoid eek smoothness so generally observable specimens, and so utterly untrue to

d's skeleton well labelled and explained bably meet school requirements, but this pplemented by a series of heads and feet g the relations between the form of these d the habits of the bird. There should t two birds stuffed and set up, not with natural attitude, but solely for the demonstrating the technical "regions" ternal anatomy. Messrs. Watkins and , 36 Strand, W.C., will supply these to labelling, however, must be done at the preferably by some neat-handed pupil. us types of feather should also be set heir parts labelled. White feathers on ackground show up best. The minute of a feather may be shown by means of onstructed of thick white paper, or of nce of the large fungus (*Polyporus*) that often grows upon the bark of decadent birch trees. The flesh of this fungus is beautifully white and homogeneous in texture. When fresh, it can be cut into strips of convenient thickness and dried; it can then be cut easily into any shape desired. In appearance, it resembles pure white leather, and it is quite permanent. The stuffed birds of the general collection are most convenient for use when each specimen is set up in a separate case, so as to be easily movable to the lecture-room when required. An appropriate scene painted upon the background of each case is a far better setting than the grasses and foliage so often inserted by taxidermists. The labels on these cases should state the popular and the scientific name, the date and locality of the capture of the individual, and also the nature of the food, the geographical range, and the migratory or "resident" character of the species. The eggs, however exhibited, must be carefully protected from daylight, which rapidly destroys the pigment of the shells. If nests are included, great care should be taken thoroughly to destroy all insect life in each by a thorough baking in an oven. If this precaution be neglected, beetles, moths, and other "small deer" will make their appearance and cause endless trouble and mischief in the cases. If there be any suspicion of such unwelcome visitors, they may be exterminated by placing a saucer full of carbon bisulphide in the suspect case, and allowing the liquid to evaporate after rendering the case as air-tight as possible. On account of the evil odour of carbon bisulphide, the operation is best performed at the beginning of the holidays, when visitors will be few for some time. Of the other vertebrate classes, the British reptiles and amphibians are so few that with little difficulty the whole number can be obtained. They should be treated on the same principle as the higher groups, but must be preserved "wet" in formalin. The amphibians, of course, afford the best opportunity of conveying ideas concerning development and the bearing of embryology on the theory of evolution. It is easy to rear young frogs from the egg, and the process may be carried on in the museum itself. All that is necessary is to place a little of the spawn in water in shallow glass bowls with a few green water-weeds, and the rest will follow. A few specimens should be picked out from time to time, and placed in formalin in small glass tubes. When the series is complete, the tubes can be attached in due order to a sheet of celluloid, and the whole mounted and sealed down in a glass jar containing formalin solution. It is useless to attempt an exhaustive collection of fishes; it will be sufficient to exhibit and explain skeletons and stuffed specimens of two cartilaginous and two bony fishes—say dog-fish and skate, pike and plaice. To these may be added a preparation of an injected specimen dissected to show the peculiarities of the circulatory and respiratory systems.

Molluscs had better be limited, in the general collection, to the land and fresh-water species. There should be, in addition to these, fully labelled

dissections and shells of common representatives of the chief molluscan orders, and fossils of the more remarkable extinct forms. This latter series might include the snail, fresh-water mussel, limpet, oyster, cuttlefish, octopus, shell of nautilus, and ammonite and belemnite fossils.

Each one of the orders of insects should be honoured with dissected and fully explained specimens in all stages of metamorphosis; the actual collections should be made and the specimens identified by members of the school, as part of the work of the natural history club. During the summer term, breeding-cages containing caterpillars, and bowls of water in which are being reared larvæ of dragon-flies, gnats, and water-beetles, are certain to be both instructive and popular. If the arrangements permit, an observatory beehive, with entry and exit through one of the window-panes, is an excellent object-lesson in the economy of social insects; and alongside it might be placed a collection of wasps' nests by way of contrast. There should also be a collection both of useful and injurious insects, and examples of the ravages of the latter should find a place.

The crustaceans, though so numerous in species, may perhaps be confined to the river crayfish, the lobster, and the species of crabs most commonly found between high and low water mark, and the rock- and ship-barnacle, of which latter the life-history should be set forth by drawings.

A convenient method of dealing with the worms and cœlenterate polyps is to arrange a "shore-pool" case, in which are placed the commoner marine worms and examples of the jelly-fishes, sea-anemones, and sea-firs. The land and fresh-water relatives of these animals may be set out in a small adjoining side-show. The unicellular animals can only be introduced by means of models or drawings, but, for the sake of completeness, a few of these should be included.

In the subjoined list are given the names and addresses of some of the firms whose goods are necessary to the museum outfit. It is not intended to recommend these in preference to others; I merely chance to have had experience of them.

For *wall-cases and table-cases*—Messrs. Holland and Hannen, 12 Hyde Street, Bloomsbury, W.C.

Tickets, label-holders, and many other useful articles—Messrs. W. Potter and Sons, Ltd., 161 Aldersgate Street, E.C.

Stationery—Messrs. W. Straker, Ltd., 49–63 Ludgate Hill, E.C.; Messrs. Partridge and Cooper, 1 Chancery Lane, W.C.

Ivory, bone, and metal labels—Hughes Label Co., Ltd., 34 Great Titchfield Street, W.; Photoglyptic Co., 82 Camden Road, N.W.

Glass jars—Messrs. Baird and Tatlock, 14 Cross Street, Hatton Garden, E.C.; Messrs. Ford and Co., Holyrood Gla Edinburgh.

Glass bowls, useful as small aquari Fowler, Lee, and Co., 78 Ba Maidstone.

Skeletons, dissections, &c.—Messr and Sons, 313 High Holborn, I

Type collections suitable for sma larger museums—Mr. R. J. Br Brecknock Road, London, N.W

NEW PHYSICAL AND CHEM APPARATUS.

By G. H. Wyatt, B.Sc., A.R.C.S Emanuel School, Wandsworth Comm

A PREVIOUS article of this nature to masters and mistresses in schools, appeared in The Scho for October, 1904. The following sel been made from apparatus exhibite makers at St. Paul's School and at W School, under the auspices of the I.A. of the Public Schools Science Masters tion respectively. It is believed that th apparatus are new and not of a cost exc possibilities of a good-class school.

Messrs. Baird and Tatlock[1] have int burner known as the "Sparsam," in tap with a lever handle at the base of t regulates the air and the gas simultaneo size of luminous or non-luminous flam obtained by turning the stopcock, and may be very much reduced without fear ing back" or being extinguished. (3s.)

Messrs. F. E. Becker and Co., I supplying a new form of Atwood's m which the chief points are a simple release, agate centre and bearings for minium wheel, absence of dropping plat no swing given to either weight when The upright is a square rod of brass, and the machine is fixed to the wall. (

Figs. 1 and 2 show the constructio pieces of expansion apparatus designe

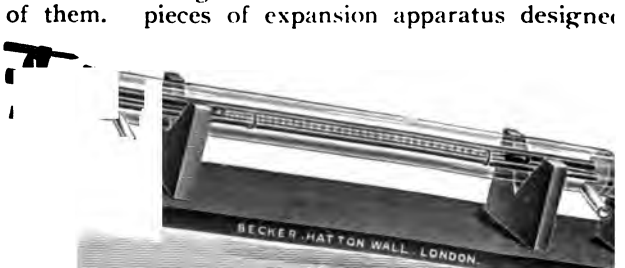

Fig. 1.

C. F. Günther. The first apparatus, for ing linear expansion, takes several rods at the same time, and each rod is brou

[1] Baird and Tatlock, Cross Street, Hatton Garden, E
[2] F. E. Becker and Co., 33–37, Hatton Wall, E.C

position by turning the steam jacket
ports. Contact with the spherometer
y the reflexion method, the end of each
polished and plated.
second apparatus, for measuring the
pansion of a liquid, contact is indicated
e manner by reflexion or by an electrical
further improvement consists in sur-
he lower end of the hot column of liquid
turns of steam-pipe, which have the
nsuring a temperature of 100° C. at
of bending to the horizontal. A point
nce is that, in both pieces of apparatus,
meter is fixed firmly to a support, and
stand precariously on a smooth glass

ecker" burner is an improved form in
olid non-luminous flame is produced.

Fig. 2.

The temperature throughout the flame is practically the same, no blue cone being visible. Tests at the National Physical Laboratory give 1430°–1470° C. as the temperatures at the centre of the flame at various heights above the gauze top, the numbers for an ordinary burner at corresponding positions in the flame being 500°–1350°. (8s. 6d.) The same burner is supplied provided with an arrangement for a forced air draught (14s. 6d.), and is also fitted with furnaces of various types, an ordinary crucible

sting £2 11s. 6d.
Brown and Son[1] have brought out an
under the name of "The Desideratum
Still," which may be used by itself or
tion with a water-oven. In the latter
eat economy of space is effected. The
is of a compact cylindrical form and
A still nine inches in diameter and
nches high delivers six pints of dis-
r per hour at a cost of three-farthings
The complete still, with burner, costs
. A combined copper water-oven and
had for £4 10s. A six-compartment
still costs £9. The same firm is
tandard water and gas fittings for
purposes, and much apparatus of a
itable for technical and hospital

h quality of the instruments supplied

nd Son, 25, Charlotte Street, Caledonian Road, N.

by the Cambridge Scientific Instrument Co.[1] is well known to science masters, and not only to those who can afford to buy the apparatus will the following descriptions be of interest:—

The sensitive micro-electroscope (Fig. 3) used and designed by Mr. C. T. R. Wilson, F.R.S., in his experiments on "the ionisation of air." Details of his work are to be found in Rutherford's "Radio-activity," recently published, and reference is made to the extraordinary delicacy of the instrument. There is one very narrow gold leaf which is supported on a wire, the continuation of the latter corresponding to the second leaf of early days. The supporting wire is insulated by a sulphur bead, and the leaf system is charged by a second "upper" wire actuated by a magnetic key on the outside of the case. The insulation is so perfect that the leakage is due to the natural ionisation of the air contained by the case. The motion of the leaf is observed by a microscope with micrometer eye-piece through an opening in the metallic case. Two other openings, covered with thin paper to preserve the conducting character of the case, serve to admit radiations which are under experiment. The price without microscope is £2 10s.

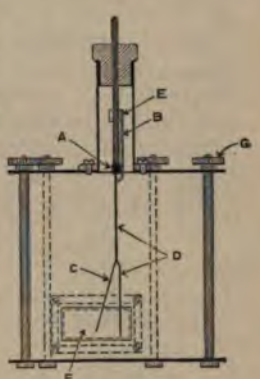

Fig. 3.

The special feature of the Broca galvanometer lies in the small magnetic moment of the "needle," which consists of two vertical parallel magnets, having a consequent pole at the centre of each, and fixed very close to one another. Quartz fibre suspension and very accurate astaticism combined further increase the sensitiveness of the instrument. (£7 10s.)

The Dolezalek electrometer is of the quadrant type, but of exceptional sensitiveness. This is due to the "needle" being very light, the quadrantal case very shallow, and a quartz fibre suspension. Figures obtained by the designer show a deflection of 8·5mm. at two metres for an e.m.f. of one millivolt. (£7 10s.) Standard cadmium cells (e.m.f. 1·0195 volts) may be purchased with a Kew certificate for £1 12s. 6d.

The Duddell thermo-galvanometer, for measuring extremely small currents and voltages, is capable of measuring the currents flowing in a Bell telephone when in use. It consists of a "heater" or coil through which the small current passes. The rise of temperature of this coil causes radiation of heat, excessively small in quantity, towards the thermo-couple of a Boys' radio-micrometer suspended between the poles of

[1] The Cambridge Scientific Instrument Co., Cambridge.

a permanent magnet. In a trial experiment it was found that the smallest *detectable* current measured 2·3 micro-amperes. (£15 10s.)

Resistance thermometry apparatus, consisting of a Callendar-Griffiths bridge, resistance thermometer, and an Ayrton-Mather D'Arsonval galvanometer, can be purchased for £10.

Several firms supply Prof. C. V. Boys' geometric tripod stands which form supports to apparatus, adjustable to any height, each tripod being in geometric contact with the one beneath it.

Messrs. Gallenkamp and Co.[1] are making a number of pieces of apparatus, called the "Technical Series," which are designed for students' use, and are stated to give very considerable accuracy in practice. Each set is substantially made, and mounted on a thick teak stand.

Fig. 4 shows the apparatus arranged for measuring the coefficient of expansion of gases at constant pressure. The special points of the apparatus are the graduated bulb and limb attached, the tap at the bend which allows the pressure in the two limbs to be immediately equalised, and the water-jacket which surrounds the whole of the mercury or strong sulphuric acid used to confine the gas, and so renders unnecessary any correction for liquid expansion. (£1 15s.)

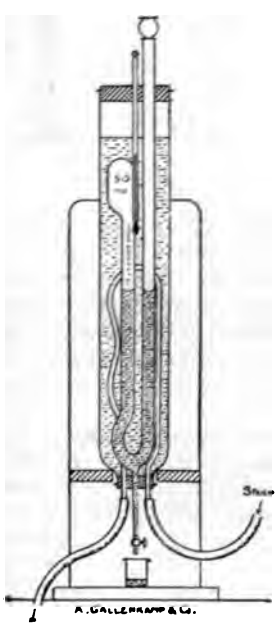

FIG. 4.

Other pieces of apparatus in the same series are arrangements designed for experiments concerning Boyle's law, pressure of saturated vapours, absolute expansion of liquids, and a constant volume air thermometer. The Boyle's tube is mounted on a support two metres in height, and consequently gives results extending over a wide range of pressures. (£2 5s.) The saturated vapour apparatus consists of a graduated barometer tube, the upper part being surrounded with a water-jacket, a small siphon being arranged to preserve a constant level of mercury in the cistern. (£2.) The absolute expansion of liquids is measured by Dulong and Petit's method. The capillary horizontal tube being provided with a T-piece and tap, the apparatus is quickly emptied, and another liquid can be then introduced. The side tubes are nearly one metre in height. (£2 7s. 6d.) The constant volume air thermometer is that of Jolly, with the addition of a side tube through which dry pure air may be admitted to the bulb at any to bring the pressure equal to that of sphere. Range of temperature, from −100°. (£1 17s. 6d.)

The same firm supplies a Davies' furnace and tripod, which consists of body with asbestos outer covering, jacket, and metal chimney. The sourc is an ordinary Bunsen burner, and, f indicated, the furnace is very efficien melting in twenty minutes, brass in ten and so on. The apparatus should bec popular, for it is both strong and cheap A new form of clamp is supplied for ho tube apparatus without a retort stan provided with a suspending wire fram allows the apparatus to hang vertic should be found useful for fixing buret edge of a bench shelf. (14s. per doz.)

Messrs. J. J. Griffin and Sons[1] issu tensive series of catalogues of special i schools. In the list of thermometers meters, means are offered of measuring tures from −200° to 4000°. Mercury meters containing nitrogen enable great to be obtained in the neighbourhood of ing-point of mercury. (4s. upwards.) A ing method of compensating for slow c zero consists in fusing a small rod o kind of glass inside the bulb of the in (28s.)

Prof. W. F. Barrett's form of Dine meter is supplied by this firm. Two tanl cold and warm water respectively to th meter chamber, and the formation of c place on silver-plated copper. In Allu strument the temperature is lowered and the dew is formed on a gilded surfac close to a similar and surrounding surfac ing a means of promptly observing t production of dew.

The optical bench shown in Fig. 5 metres in length, and the uprights are s that the objects can be brought close another. The separate pieces of appa cluded in the set can be easily seen figure.

Andrews's automatic vacuum regulato is designed for use with vacuum pump is desired to maintain a constant pres in distilling under reduced pressure. rod, by pressing on a spring, accordi position, modifies and also maintains the required to open a valve. The appara exhaustion is connected to the side tube. the vacuum-pressure fall below that f the spring is adjusted, air enters by t (3s.)

Messrs. Philip Harris and Co., Lt issued two large catalogues of phys chemical apparatus, from which we select a few numbers.

The firm make a speciality of Atwood

[1] Gallenkamp and Co., 19, Sun Street, Finsbury Square, E.C.

[1] J. J. Griffin and Sons, Kingsway, W.C.
[2] Philip Harris and Co., 144-146, Edmund Street, Birm

y supply in different grades at prices om £2 to £10 15s., each machine being ll pattern.

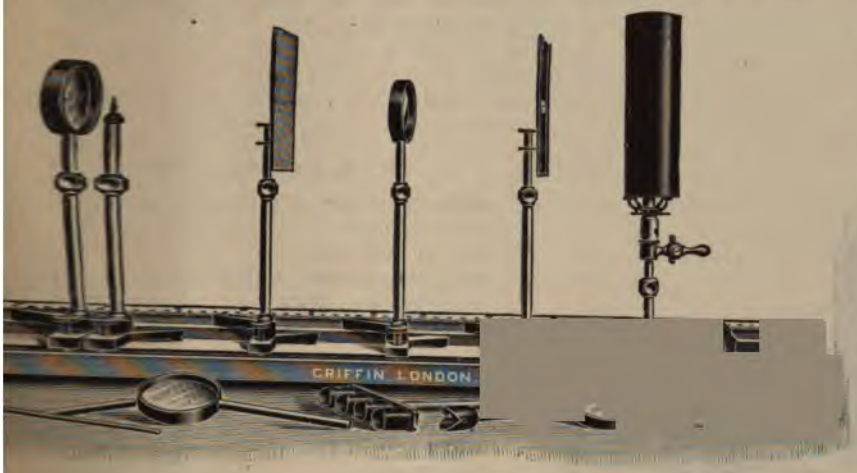

Fig. 5.

7 and 8 show the construction of the timing arrangement, which can be applied form of machine. Pressing on a contact key releases one of the moving weights, and at the same instant causes the electro-magnetic lever (Fig. 7) to start the stop-watch shown. The other moving weight, striking the platform (Fig. 8), again completes the circuit, and so causes the lever to stop the watch.

A D'Arsonval galvanometer is supplied by this firm for £2 7s. 6d. in brass case, and a cheaper form on mahogany base and under glass shade for £1 2s. 6d.

For electrostatic experiments a convenient indicating instrument is the ebonite needle—a strip of ebonite mounted on a pivot exactly ordinary magnetic needle. (3s. 6d.)

O'Toole apparatus for measuring linear ex-

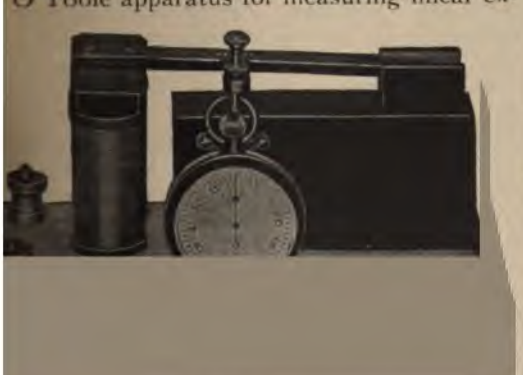

Fig. 7.

n employs the principle of the optical lever, asures the displacement of the end of the rod by bringing back to the horizontal a spirit-level displaced by the expansion. (£1 12s. 6d.)

Useful pocket-books are issued by Messrs. Harris, comprising "science data" and a diary. Five-figure logarithms, arranged by Mr. A. Du Pré Denning to get over the difficulties of the "differences" in the low numbers, give log 4 to 9999 and antilog 0·0 to 0·699, together with various useful tables. These tables are also issued printed on a varnished card.

Messrs. W. G. Pye and Co.[1] issue a catalogue in which the items of interest are very numerous. A ballistic galvanometer (Hibbert's) is shown of the D'Arsonval pattern, and should be popular at its low price (£1 12s. 6d.), which includes an inductor of 200 turns. A two-volt storage cell may be had for 1s. 9d., suitable for joining with others to form large groups, and, for 2s. 6d., provided with brass terminals used singly as a standard. A convenient magnetometer (Searle's) consists of a brass holder provided with an aluminium pointer, and is capable of comparing strengths of fields from 0·5 to 4·0 c.g.s. units. (2s.) In magnetometric experiments the position of a magnetic pole is obtained more or less approximately with the ordinary rectangular-shaped magnets. The position is fixed with greater certainty by using Robinson magnets with spherical ends. These may be had for 3s. 6d. a pair.

Fig. 8.

The absolute conductivity of copper for heat may be measured by means of Searle's apparatus, which is shown in Fig. 9. The teak case, packed with felt, may be opened for exhibiting the construction of the apparatus. It is only necessary to say that the heat is applied at one end of a twelve-inch bar by means of a steam jacket, and the other end of the bar is maintained at a constant temperature by a spiral tube through which passes a stream of cold water. (£5.)

For practice with lenses, a trial case containing fifty of various focal lengths should be most useful. (£2 15s.)

This firm makes a speciality of squared paper, both loose and in books, of various rulings, English, metric, and logarithmic. At the end

[1] W. G. Pye and Co., Granta Works, Cambridge.

of the catalogue is an extensive list of apparatus such as is required by each set of students working at elementary courses in the various branches of physics.

FIG. 9.

Messrs. Townson and Mercer[1] are supplying an improved form of Lavelle's expansion apparatus (21s.), and a model compass in gimbals (12s. 6d.). Fig. 10 shows a new form of eudiometer (Wilson's patent), the construction of which is easily seen. A and B are graduated tubes, the latter being provided with platinum terminals and surrounded with a jacket; C and E are three-way stopcocks, and F a mercury reservoir. By raising or lowering F, gases may be driven from or drawn into A or B, or driven from A to B, use being made of the three-way stopcocks.

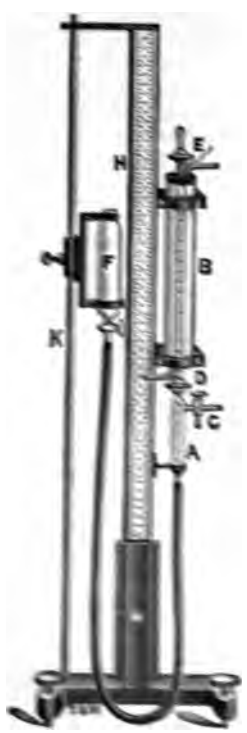

FIG. 10.

The instrument may be used for illustrating Boyle's law for pressures greater or less than that of one atmosphere, the gas experimented upon being in A or B respectively. For Charles's law the gas is heated in the tube B. To find the various volume changes of interacting gases either on sparking or on simply mixing, the gases under examination are stored in A and B, and brought together by raising the mercury reservoir F. This apparatus should prove of considerable value in eudiometric work, one great advantage arising from the fact that the gases are measured in A and B before being mixed in the tube B [illegible]

[1] Townson and Mercer, Cambridge Street, E.C.

Several firms are supplying porcelai burners (4s.) for use in fume-cupboar corrosion takes place with great rapi burners may be obtained provided w pipe jets if desired.

PENS AND PENHOLDI

By J. W. JARVIS,
St. Mark's College, Chelsea, S.W

Smith. The Clerk of Chatham: he can wr and cast accompt.

Cade. O monstrous!

Smith. We took him setting of boys' copies.

Cade. Here's a villain!

Smith. He has a book in his pocket witl in it.

Cade. Nay then, he is a conjurer.

Dick. Nay, he can make obligations and hand.

Cade. I am sorry for it. What is thy name

Clerk. Emmanuel.

Dick. They used to write it on the top of l go hard with you.

Cade. Dost thou use to write thy name? a mark to thyself like an honest, plain-dealing

Clerk. Sir, I thank God, I have been so up, that I can write my name.

All. He hath confessed; Away with him! I and a traitor.

Cade. Away with him, I say! Hang him and ink-horn about his neck.

2 Henry VI., Act IV

MR. THOMAS HODSON, in the plished Tutor," 1806, insists up pen and good free ink, without impossible to write a fair copy." We Mr. Thomas Hodson ever tried to wr hotel pen—that in the coffee-room pr perhaps the pen and ink in the v country church, and if he found the or the ink "free"? How he must h for the metallic stilus and the wax ta Roman or the Greek! But the Rom Greek also used the true representa modern pen, a hollow reed, as is yet the East. We have seen it asserted were used for writing as early as the f and in Europe they were lon writing implement, the sorts generally those of the goose and the swan. "Swan" pens extensively advertised

This form of pen prevailed in Eng 1803, but almost a hundred years ago produced steel pens of a barrel form, a boon [illegible] for carrying in the poc not at first [illegible], and though reduced to sixpence they were not ve because they were of indifferent make, ing to use. In 1822 the well-known Jo succeeded in making a pen of thinne elastic steel with a better temper Further improvements [illegible] so reduc and raised the sale to that a gross of [illegible] by the [illegible] makers at

of a single pen in 1821. Cast steel of quality is used in the manufacture, and us operations are performed by cutting, , and embossing apparatus, worked y hand-presses. Birmingham was the e, and is still the principal centre, of the industry. Gold pens tipped with iridos- compound of iridium and osmium, most and resembling gold in appearance— extensively used, and a good one will years. These expensive pens are gene- d in a holder carrying a considerable of ink—hence the name fountain-pen. trouble with a fountain-pen is not the but the equality of the discharge, and t successful form yet produced is an invention.

s modern social life is perplexed by the ivision of labour, so the modern school- confronted by the three divisions of his en. He must be an authority on the barrel attachment, and the holder or f two are good and one is bad there is of failure, and the modern child is quite ugh to risk this. A nib tied to a stick cotton has not been unknown; indeed, mly held by the fingers has probably w escaped the vigilance of the teacher, a loose nib found in the school ink-pot y. Mathematicians tell us that with three e can make six permutations; with the isions of his pen the ink-stained fingers enious boy can make an infinity.

the nib. Nib is the same as neb (A.S. uth, beak). It is allied to the Dutch eak, compare the E. snipe, and it liter- ns the point of anything, particularly pen, adapted to be fitted into a holder. it referred to cutting a point on a

How profoundly would he nib a pen."
LAMB, *South Sea House.*

m of manufacturers (Messrs. Gillott and e placed no less than forty-six varieties the market, together with seven varie- hich the nib is part of the barrel under liar trade name of "magnum bonum." these are small—no thicker than knit- crochet needles—and they are used for echnical purposes, chiefly in connection hitectural drawings. At the other end ale are pen-nibs with thick blunt points, ly smooth for "grown-ups" afflicted *oëthes scribendi.* They offer no resist- our thoughts as they flow smoothly surface of the paper, and they lessen ue of our weary hand. Between these s lies the schoolmaster's choice, and we e advisedly, for, if he will not decide, will for him, and bring to school some l and fearful things in the shape of Never shall I forget the joy of the introduced a pen, the nib of which ran t right angles to the shaft. He had he rules of the school that each boy should provide himself with a pen, and he not only proposed to use it, but to distribute others among his fellows. His teacher was young and inexperienced then, but he turned the occasion to good account, for it made an excellent work- ing explanation of the phrase "driving a coach through an Act of Parliament," which occurred in the next history lesson.

The schoolmaster, then, must choose the nib, and not allow the eccentricities of the maker to fascinate the pupil. It should be of moderate length, varying from one and three-eighths to one and five-eighths of an inch, for younger pupils. The points should be fine, not abruptly ended as in a **J**, nor too long to lose their rigidity. They should be elastic under faint pressure, and be so tempered that they do not lose this elasticity after short use. If the points are too fine, they splutter and catch the fibres in the paper; if the points are too rounded (as in a ball-pointed pen), they offer too little resist- ance to the inexperienced hand. The design should be plain, though shoulders are recom- mended, as they give strength to the split point, and a small rectangular hole serves admirably as a reservoir for the ink. But one type of nib is not recommended throughout a school. As the pupils increase in dexterity, proficiency, and finger control, the nib should develop into a softer form, running more freely over the surface, and with a more rounded point. As facility increases, written exercises should be done with the maximum degree of rapidity consistent with full legibility. The hardness or firmness of the nib should not hinder thought, and the attention of the child should not be abstracted more than is absolutely neces- sary from the subject by the machinery which is being used. The "Carnegie Series"[1] of pen-nibs seems to meet the conditions laid down very satis- factorily. There are several choices among the fine and medium points, and they are neither too hard nor too stiff for young fingers. For this reason about three qualities of nibs are necessary for pupils from eight to sixteen years of age, and the promotion from one to the other is often an in- centive to good work. Grown-up-ness is the ideal of the boy, and the pupil who feels he is growing up is capable of exerting himself beyond the dreams of an exacting master. The school nib, then, should be as simple as possible, should be provided from within and not from without the school until the pupil has reached the age of discretion, and a supply should be kept in each master's desk in readiness for emergencies.

The barrel or connection between the nib and the shaft is of some moment. It should be made of steel for rigidity, should grasp the shaft very firmly, and hold the nib securely. Here, again, let us put in a plea for simplicity, and for the absence of devices which are a snare to the boy and a worry to the teacher. Cheapness in the holder means inelastic and inferior steel in the barrel. Too many holes or spring clutches for

[1] Macniven and Cameron, Edinburgh.

the nib also weaken it, and the annual destruction of barrels by the healthy boy is only paralleled in the profligacy of Nature. The barrel should taper towards the nib in the same manner in which a well-sharpened blacklead pencil assumes the conical form, and the junction of the two should not be abrupt or marked by any protuberance.

Avoid devices to keep ink from the fingers; the remedy is worse than the disease. A wine merchant, on hearing that the great Earl of Derby was suffering from the gout, sent him a case of sherry. The Earl replied thanking the merchant for his kindly sympathy, and said that, having tasted the sherry, he preferred the gout. Inky fingers are better to bear than teaching writing with ink-avoiding preventives. Many years ago, barrels were sold with indentations on them showing where the fingers should be placed when the pen is held correctly. But, we may ask, when is the pen held correctly? Against forcing all fingers into one position before the strokes can be made, we are passive resisters.

In a book on the art of teaching, which lies before us, no less than six series of commands are suggested to the teacher before the pupil can begin to write. As the charity boy said when he had been induced to learn the alphabet, "he did not know he had to undergo so much to learn so little." Certainly at first the fingers are held too stiffly, but this disappears with practice, and the simple rule is that the child's first and second fingers should be straight or bent slightly outwards, and never rigidly bent in. This allows for a slight motion of the pen being made without any other motion of the hand. The pen or pencil, to encourage finger movements, should be held at least one inch from the point, and should be inclined to the paper about 60°. The pupil should always be able to see the point of the pen as he writes. Perhaps some advice given for beginners may be useful here. A preliminary step to handwriting is training in making the various simple strokes which are requisite for the formation of letters. The lines and curves may be practised successively in the sand-tray, with chalk on the blackboard or on prepared walls, then with brush and pencil on a smaller scale, and finally with the pen. The "magnum bonum" (nib and barrel in one) represents the perfection of adjustment between these two parts, but the cost—almost a penny each—is against its use in school. Brass barrels are useless owing to their want of elasticity.

The third part of our pen is the holder or shaft. The quill with its close-cut feathers was an ideal holder. It was light, it tapered, it was balanced, and it was pleasantly flexible. We have now a rigid cylinder, sometimes grooved, ill balanced, and most vilely varnished. An improved shaft of cedar wood has been put upon the market, but, owing to its absorptive qualities, it soon becomes dirty. With a fine coat of varnish, these holders are sold at 4s. 3d. a gross, and this represents a substantial article at a very fair price. They are nine inches long, thus at least three or four chances for the b them down. Why are boys so keen abo their penholders to the smallest dir When the youth leaves the school-des counting-house, he annexes the longe the office, and, pertly stuck behind th becomes a formidable weapon at close

The minimum size for a pen sho length that will reach from the pape an inch above the first knuckle, *i.e.*, a inches. Below this, a pen is impossible, faced confiscation is the only remedy. fiscation has been broached, we had b Mr. Gilbert's *Mikado*, "make a list" o pens which should be instantly annex vigilant teacher. First and foremost, th affectionate aunts and uncles buy at th They are made of bone, elaborately turne for the insertion of microscopic views, an off by a brass holder. They weigh twic as an ordinary pen, and this extra weig additional fatigue, mounting up in g progression as the day goes on. Secon which "a double debt do pay," being a at one end and a pen at the other. I men at hand, exactly six inches long, t of support is three and three-quarter in the pen end, and two and a quarter in the pencil end. This is all right for t but quite wrong for the pen, and most for the pupil. The third on the list is tising pen. We used to confiscate an with a swivel pad at the top, by whic could stamp his name not only on his property but on anything else, while the ink lasted. The latest product of ing have acquired is a pen in which the hol verted into a calendar. The inside is cylinder, and a cloth calendar is arrang same principle as a spring tape mea course, the spring lasts two days in of an enthusiastic boy, though the a thoughtfully provided for two years. the holder is a heavy ornamental sc which a capital portrait of our graciou deftly inserted. The firm, it need s said, is a foreign one.

Of fountain-pens there are two variet called stylographic, is a wire with a point; the other is a pen. The form suitable for boys at all; indeed, the wir difficulties to men; but these are beside t question. The latter is very expensiv far the pen-nib supplied is better a satisfy commercial than educational ne cheaper varieties are disastrous, as soon loses its flexibility, the strokes ar and the pen offers an insufficient res the untrained hand. To the boy, the not that he desires a ready instrume cording his thoughts on paper, but th play at filling and refilling the fountair by means of the suction-dropper. We h many experiments with this pen, and

ome up to the standard required for the urpose of training a boy to write.
n up. The holder should be about one- f an ounce in weight—that is, eight pens the nibs should balance one ounce. A test is that two complete pens should one penny, and should measure, when nd to end, about one foot. This repre- ben which can be used by young fingers fatigue, is designed to teach the ele- letter-making and current writing most y, and serves as an excellent introduction ter form of penmanship when it becomes unconscious instrument of thought that may be truly said to be "mightier than d."

USE OF GASOLINE IN SCHOOL LABORATORIES.

By J. Rees Foster, B.Sc. (Wales),
Headmaster of Llanberis County School.

ORT description of the installation of lant for the generation of gasoline for se in the Llanberis Intermediate School in *Nature* of November 9th, 1905, and to have interested enough readers to call ore detailed description of apparatus, and cost.

result of the adoption of more rational the place of experimental work in a y-school curriculum, the demand of eachers for proper laboratories is rapidly t by school governors. Where a town ly is available, the question under dis- oes not arise. But not a few schools are ach of coal gas, and only those who have d to organise school courses in chemistry sics without it can fully realise how de- upon it we have become.

w more than five years since the question d itself in all its difficulty at Llanberis, n additional laboratory accommodation e provided a practical solution of the was imperative.

l gas is not available, the choice seems to en acetylene and gasoline. The former rently been successfully adopted in one t least, and an account will be found in HOOL WORLD for January, 1902, of its he laboratories of Felsted School. That valuable substitute where great heat is y is clear from that article, and the writer far as to say that "the laboratory would make an exchange in favour of coal Gasoline, on the other hand, as far as ascertained, had not been successfully d in this country, though it has been various purposes in America for many The first gasoline machine of which par- were obtained involved the use of a heat- e to assist evaporation, and was rejected round that the risk of explosion was too great; but further inquiries showed that gasoline could be successfully manipulated without this serious drawback. Estimates were obtained for acetylene and for gasoline. The chief object was to provide heating burners for the chemical and physical laboratories, and a secondary object was to light the school buildings.

For purposes of comparison, the following details may be given. Provision had to be made for about fifty Bunsen burners and about the same number of illuminating burners. The conditions laid down were, that the plant should provide sufficient gas for either of these sets of burners singly, but would not be called on to meet the demands of the laboratories and supply light for the whole building at the same time. The question of expense had to be considered seriously in the choice of the system. The tender of a firm of acetylene gas engineers, which had already done similar work, was rather more than £186, including all gasfitters' work. A tender for gasoline plant, including all special burners, was £62. A separate tender for piping and gasfitters' work, to be done locally, was £70. Thus the capital outlay was 40 per cent. higher for acetylene. To make the inquiry complete, a rough estimate was also obtained of the probable cost of connecting the school up to the nearest coal-gas supply, and the cost of laying mains alone worked out at about £400. The still more important question of cost of maintenance could not so easily be found, and the writer had no means of experimentally comparing the actual cost of the two systems. There, however, seemed no reason to doubt the estimate that one gallon of gasoline is equivalent to fourteen pounds of carbide as a source of gas giving equal illumination. With gasoline at 1s. 6d. a gallon, this works out at about half the cost of acetylene, and, as will be shown later, gasoline involves far less time and trouble in manipulation. This great advantage in the matter of cost, and the knowledge that gasoline was an efficient substitute for coal gas for laboratory purposes, decided the question in its favour.

The machine was supplied by The Walworth Manufacturing Company, of Boston, Mass., and with it were supplied all special fittings, including illuminating and Bunsen burners. A local gasfitter supplied all necessary piping, and set up the machine without any difficulty under the supervision of the writer.

The method of generation consists simply in driving air over the surface of the gasoline in a tank, and is carried out in practice as follows:—A large shallow cylindrical tank of copper, C (Fig. 1), about six or seven feet in diameter and about a foot deep, and holding about 250 gallons, is buried in the ground some twenty or thirty feet from the building. Three openings are provided in the top of this tank. Into one is screwed a vertical two-inch pipe, B, opening at the surface of the ground, and fitted with a gas-tight screw cap, through which pipe the tank is filled with gasoline. From the other openings are carried,

underground, two horizontal pipes to the gas-house, which may be a small cellar or other convenient place in the basement of the building. One of these is an inlet pipe, D, and the other an outlet pipe, E. In the gas-house is placed the air-pump, J, which, filled with water to the level S,

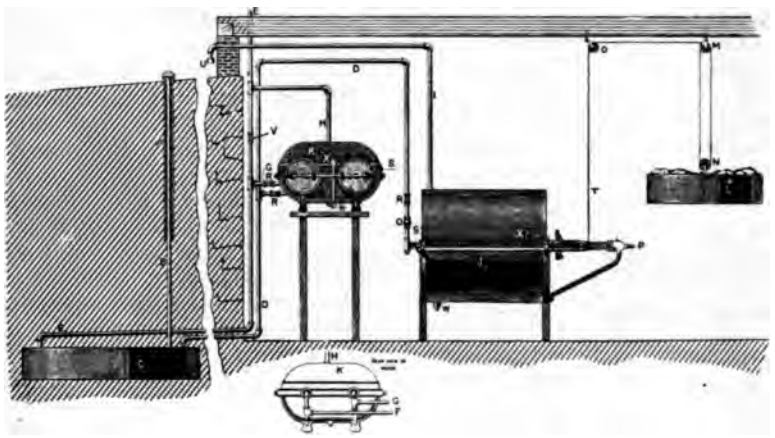

FIG. 1.—GENERAL ARRANGEMENT OF THE WALWORTH GAS MACHINE AND MIXER.

A, 3" sleeve with cap covering B; B, fill pipe to C; C, generator; D, air from J to C; E, gas to house system from C; F, air from J to K; G, gas from C to K; H, mixed air and gas from K to house system; I, air induction to J; J, air pump; K, mixer; L, weight pan—power for J; M, 4 sheave pulley—top; N, 4 sheave pulley—bottom; O, single pulley: P, crank shaft—for winding; Q, check valve; R, cock; S, water line; T, wire cable holding L; U, strainer for induction I; X, filling plugs; W, draw-off plugs.

sucks air through I, and drives it through the pipe D, on to the surface of the gasoline in the tank, C. This causes rapid evaporation, and a mixture of gasoline vapour and air is driven out through the pipe E. It is clear that the "richness" of the mixture arriving from the tank will vary according to the amount of gasoline in the tank, and at first, when it is nearly full, this mixture will be much too rich to burn. The cock, V, is shut, and the mixture passed through G into the mixer, K, which consists of two parallel horizontal revolving cylinders, and is filled with water to the level S. The rear view of the mixer shows the two inlet pipes, F and G, opening into the two cylinders. Into one cylinder the mixture of air and vapour from the tank is admitted through G, and into the other cylinder, air from the pump through the pipe F, branching off the pipe D. The pressure from the pump causes the cylinders to revolve, and the relative amounts of air through F and mixed air and vapour through G depend on the rate of revolution of these cylinders respectively. The rate of revolution is regulated by the positions of two movable toothed wheels on a horizontal rod passing across the faces of two vertical metal discs. The discs carry a series of concentric pegs, which engage the toothed wheels, and by a very simple adjustment of the positions of the wheels on the rod the rates of revolution of the cylinders attached to the discs can be regulated as desired. Thus any required amount of air can be added to the mixture of vapour and air which arrives from C, until a final mixture is obtained which yields the best results on burning. This contains about 15 per cent. of gasoline vapour to 85 per cent. of air, but somewhat according to the use to which to be put, and the kind of burner employ

The mixer once set does not require tention for weeks. The outlet-pipe, H, fr mixer leads into the house system. It course, necessary, when stallation is first started, t the air out of the pipes lighting the gas at the b As soon as the gas beg burn with a poor and blue the amount of air admitt the mixer is decreased simple adjustment descril

The construction of th sen burner will be easily stood by reference to I The burner differs from dinary coal-gas Bunsen possession of a screw plug into the bottom of the burn worked by a milled hea screwing this up, the point plug gradually closes the hole through which the gas the vertical tube of the I This tube carries at its low a number of air-holes ar in a ring round a collar ing on to the lower part of the burner. screwing this tube, the amount of air ad can be much more delicately adjusted tha the ordinary form of burner. The comb of these two adjustments allows of the tion of a non-luminous flame of any size required, without causing the flame to burn at the foot of the tube. These burners give excellent results, the non-luminous flame being as nearly like that of a coal-gas Bunsen as possible. They do not choke up or require periodic cleaning. All the ordinary modifications supplied for coal-gas Bunsens, such as the rose burner, flat-flame burner, rings, &c., usually fitted as tops for purposes, can be used equally well wi gasoline burner. The blowpipe as suppl coal gas requires a slight modification, sitated by the fact that the gasoline flame i easily blown out. The nozzle of the air

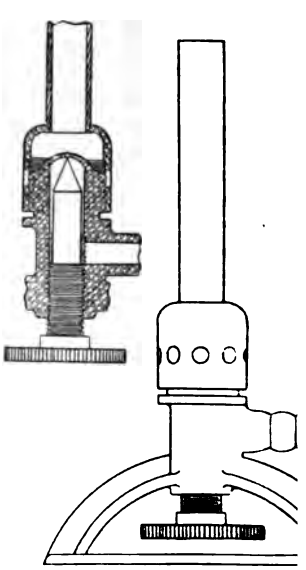

FIG. 2.

of terminating just inside the open end lowpipe, is carried about one-eighth inch it. It is then impossible to blow the t by any pressure from the foot-bellows, blowpipe completely satisfies all demands it. Where a large amount of blowpipe done, it is worth while to carry a separate from the pump to the blowpipe table, away altogether with the foot-bellows. done in works where blast-burners are in use.

umination, specially constructed burners er results than coal-gas burners, though give quite satisfactory light. It is of obvious, from what has been said about burners, that incandescent mantles are for use with gasoline, and the results highly satisfactory as with coal gas. generally, gasoline is as satisfactory a y agent and as good an illuminant as gas, and far better than that usually to small towns. It is cleaner, and not re expensive.

ains to describe the attention required achine, and herein lies one of its greatest es over other systems of private gas- The whole apparatus is extremely nd the amount of attention required very The weight has to be wound up once a nce every other day—an operation that out two or three minutes. The mixer has lly to be adjusted—an even simpler han winding up the weight. The filling ank is the only serious operation, and ency depends clearly on its capacity in o the demands made on the supply. One asts from one to two years. By placing s on the pipes D and E, outside the build- tank can be shut off from the house and without causing any waste due to back from the pump. The gasoline is poured tank, and the whole operation completed ple of hours, care being taken not to fill too full. The water-levels in the pump ter should be carefully adjusted, but no further attention. Gasoline is a of the lower-boiling-point hydrocarbons petroleum, and is supplied by the n oil companies in this country at 1s. 5d. d. a gallon. Only the best should be ich boils between 35° C. and 70° C., and pecific gravity of about 0·63. It com- vaporates, leaving no residue, so that requires no cleaning out, and, as the one consignment can be emptied into none need be stored.

L." *Smoking Chart.* 35in. by 45in. (Leeds: s.—To those who are convinced that the evils smoking can scarcely be overrated, this chart elcome. It sets forth in simple and concise he injurious effects of nicotine on the blood, art, digestive organs, &c. Some of the state- we imagine, make boys wonder that so many moke rs survive to tell the tale.

THE PRODUCTION OF ARTIFICIAL SPEECH SOUNDS.

By Prof. Walter Rippmann, M.A.

EVER since the talking machine was invented the idea of utilising it for language teaching must have presented itself. This idea sometimes assumed grotesque forms; it was suggested that language teachers had better look out for some other employment, as the machine was going to take their place.

Vague speculation was followed by experiment, and as a result we have gradually arrived at a more just estimate of what we may expect from a phonograph and from its more recent rival, the Gramophone.[1]

It is some five years since I began making records with the phonograph. My first attempts were only partially successful. I gradually became accustomed to the peculiar phonograph *timbre*, until I seemed to hear a voice which was faint indeed, but tolerably natural. Others whose ear was less familiar with the machine were not much impressed, and for a time I ceased to experiment, as I believed that there was something imperfect either in my voice or my method of reproduction.

Then some records were advertised by the Modern Language Press and submitted to me. They had evidently been spoken very rapidly, so as to get on to the record as much as was possible of the text occurring in the book. The result was intensely irritating to the nerves. They confirmed me in my belief that many improvements would have to be effected before the phonograph could be introduced into the class-room with advantage.

Over two years ago I was approached by the directors of the Gramophone and Typewriter Limited, and willingly accepted their suggestion that I should make a series of experiments in their laboratory, before expressing an opinion as to the educational value of their instruments. It may be of interest to explain briefly the difference between a phonograph and the Gramophone.

The general principle is the same. The waves of sound set up by a musical instrument or the singing or speaking voice cause vibrations in a sound-box, and these are communicated, by means of a sharp point, to a special kind of wax. This is in the shape of a cylinder in the phonograph, and the blank record is placed on a cylinder, which revolves from 120 to 150 times a minute, while the point travels slowly from left to right. In the case of the Gramophone, the material on which the sound-waves are inscribed is in the form of a disc, revolving at the rate of about 70 revolutions a minute. The point starts near the edge, and travels in an ever diminishing spiral towards the centre.

The vibrations produce "up and down" impressions in the phonograph record—a series of

[1] The Gramophone is selected as the best representative of talking machines with records in the shape of discs, for which there is no generic term.

tiny hills and valleys; in the Gramophone record the vibrations are lateral, that is, the reproducing needle vibrates from side to side.

The phonograph record can be heard as soon as it is made if, in place of the recording point, a sound-box is attached, in which there is a hard and comparatively blunt point. The cylinder revolves again at the same speed, the point travels over the hills and valleys, vibrations are set up in consequence, and these produce a series of sounds like those originally uttered, only fainter, and with certain changes, which give what I have called the phonograph *timbre*. When the original sounds were very powerful, the *timbre* is not marked; in records of speech, where the volume of sound is not great, this *timbre* is disturbing. I have heard no speech records in which it was absent.

For commercial purposes, the "master record," *i.e.* the original record, has to be reproduced in large quantities. There are two ways of doing so. One is to set the master record going, and to let the sounds so produced be recorded on a number of blanks which are, so to speak, listening to it. Now it is clear that these will be records of records, giving the original sounds in a twice-changed form. There are the *timbre* of the master record and the *timbre* of the record made from it. This process could obviously not be considered satisfactory, and further experiments were made which led to the system now in general use for multiplying records.

The wax master record is subjected to chemical treatment; metal is deposited on it, which gives a matrix from which any number of records can be cast. This shows exactly the same indentations as the master record. The "moulded" phonograph records are, consequently, much better than those produced by the older process mentioned. The process employed in the production of Gramophone records is a jealously guarded secret; but the general principles are the same. The discs as sold are of a hard black substance resembling vulcanite, and will stand any reasonable treatment.

The teacher is, of course, concerned with the practical question: Can I make any use of such instruments? If so, is it to be a phonograph or the Gramophone?

The phonograph has the obvious advantage that the student can make his own records, but this is of real value only to the trained observer. It is not enough to reproduce sounds; you must also be able to discriminate them. Just as the teacher cannot give the best help to his pupils unless he has studied the sounds of speech, so it requires a phonetic training to derive full benefit from a record of one's speech.

The obvious use of the talking machine, however, is to provide models of native and foreign speech; and it is the intonation of connected speech rather than the individual sounds that can be learnt. It is a pity that the rate of revolution cannot be diminished so that the words are produced quite slowly and the separate sounds can be studied. A reduction of speed alway such a lowering of pitch that the sound quite unnatural. But the intonation is r excellently; if we wish to observe it th need to reduce the speed.

After hearing many records of spee phonograph and the Gramophone, I hav tation in saying that the Gramophone better results. It is true that som "moulded" Pathé phonograph records French are very good, but even the be free from the peculiar *timbre* which separable from the phonograph. Th phone also has its drawback—the " The origin of it is still something of a In some records it is objectionable, hardly noticeable. Fortunately, it does the voice; it is merely a kind of accom As it is a noise, and not a musical soun not carry far.

When I had satisfied myself that th phone deserved serious consideration as tional appliance, I willingly agreed to m it. At my invitation, Mr. S. Barlet wro of thirty-one dialogues dealing with F and ways, and, after numerous exper complete set of Gramophone records re these dialogues has now been made. necessary to relate how many voices and how often a record had to be m because of some trifling slip. Few car experience in this rather tedious work.

They were almost ready when I hea Cambridge phonograph records. I gath the prospectus that the difficulties I had in my early attempts had been overco looked forward with genuine pleasure these records. What my feelings we had an opportunity of doing so I pre describe. The selection of passages for tion had been made with such evident c seemed cruel that those interested hac no better results. That their want of due in large measure to the mode of re there can be little doubt. The records taken from master records by the earli indicated above; an installation for "n records was probably found too Whether it would not have been cheap i run to have the master records reprodu regular factory of one of the large p companies is another question.

The price of the instruments and r mains to be considered. Phonographs at almost any price; Gramophones a whole, more expensive. The Cambrid graph records cost 3s. each; those Pathé cost from 1s. 3d. to 5s. In catalogue will be found a good selection pieces spoken by well-known French actresses. The ten-inch Gramophone r 5s. each. The thirty-one dialogues wil shortly; the book containing the text interest to modern language teachers. also some good Gramophone records c

ables (spoken by Delaunay), of passages ssical German plays, and of well-known It is much to be desired that the number ophone records suitable for educational should be largely increased.

he recital of passages of literary value by sed artist in speech, if well reproduced by machine, is likely to prove a valuable in the class-room cannot be doubted. e machine which is used in the French or class will serve the teacher of English ; it can also be utilised in the singing nd can supply the accompaniment for drill.

ore teachers show interest in these in- s, the more likely those commercially in- will be to improve them, so that they may better reproductions of the spoken voice, crease the number of the records, so that have at our disposal a rich *répertoire*.

UAL INSTRUCTION IN BOYS' SECONDARY SCHOOLS.[1]

By W. A. Knight,
Sexey's Trade School, Bruton.

III.—Metal-work.

KING in metal follows on naturally rom woodwork, and is so interesting to oys that it is strange how seldom it is d into the upper forms of English y schools. It would be difficult to pro- od work in metal without a previous in the use of tools, but, given this early it is surprising how rapidly boys ccustomed to work with heavier tools rials. In the greater part of the work e necessary and desirable to aim at a her standard of accuracy than in wood-

p a boy too long at operations like filing ping would be to deprive the work of and there is no reason why he should cted to iron as a material. Forging is but is worth the trouble involved. Solder- he "dream" of the average boy of a al turn of mind, and might as well be taught; it opens up an enticing prospect hool where physical apparatus has to be repaired.

sses will probably be smaller, but rather or-space per pupil is required than in k.

inuous 3in. bench, 2ft. 6in. high, 2ft. ould run round three sides of the shop, ll vices and anvils combined fixed 4ft. d a drawer under each bench-place. If paved floor, the very necessary rigidity btained by screwing the benches to light dards of T-section, let into the floor. A ce should be reserved for a teacher's ce, provided with a larger vice, and sets of drawers and cupboards below. A strong drilling-machine can be fixed at any convenient bench-end. The sets of tools are best arranged on a rack running round the walls above the benches, the general tools being in the teacher's care.

Two small forges are better than one large one, and should be placed against one wall, with a

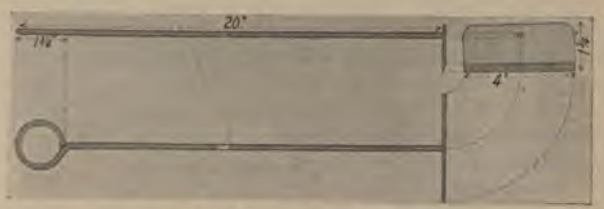

Fig. 1.—Model No. 5. Stove Rake (Iron).

large anvil conveniently near each. A grind-stone (which can also be used for grinding the woodwork tools), a set of stocks and dies from ¼in. up to ½in., a supply of coarse and fine files, soldering irons, shears for metal-plate, pliers of various kinds, and two sets of forging tools are all indispensable.

It will be found necessary to modify the class-system of teaching in some parts of the course, *e.g.* in forging. After the teacher has demonstrated, the boys should take it in turns to practise the operation on a spare piece of rod, one boy at each forge, while the others are working at some other model not requiring the forge or anvil. The boy should not be allowed to begin his model until he is fairly proficient in the exer-

Fig. 2.—Models 9 and 10. Funnel (Tin) and Bucket (Sheet Iron).

cise which it involves. When the class has made some progress in the course, and the danger of ruining the tools and of wasting material is reduced, the making of simple pieces of physical apparatus can be suggested as a suitable occupation on wet half-holidays. The minor repairs of a bicycle can also be "tackled" by the best

[1] The second article appeared in March, 1906.

boys. After the first year, such tools as the square, chisels, &c., will be made in the shop.

In the following suggested course the models have been chosen solely with a view to illustrate the exercises. The latter are the "essentials," and *must be graded carefully in difficulty*. No two teachers will agree as to the actual order, and many will be able to suggest other, and possibly better, models. The idea of framing an "engineering" course has been studiously avoided; the cost would be very much greater, and, in the writer's opinion, the use of machine tools does not give the desired training of hand and eye; the proper place for such a course is not the school, but the technical college.

LIST OF TOOLS RECOMMENDED.

	£	s.	d.
Calipers, "in" and "out," 5in. ...			10
Cross-pane hammer, ½lb.		1	0
Cross-cut chisel			9
Straight chisel			9
Compasses			8
Brass scriber			3
Steel scriber			3
File, 10in., middle cut, flat float ...		1	0
File, 10in., bastard			10
Try square, 5in.		1	6
Steel rule, single		1	0
Tinman's mallet		1	0
Cheney anvil and vice, No. 30, 3¾in. jaws	1	0	0
One set for each bench-place at	£1	9	10

TOOLS FOR GENERAL USE.

	£	s.	d.
2 pairs round-nosed pliers		1	6
3 pairs cutting bell pliers, 6in.		6	0
2 hacksaws		8	0
1 round B.W. gauge, 1 to 26		6	0
1 oilcan, ½-pint		1	0
2 tinman's shears, 10in.		6	0
1 rule-joint compass, 8in.		1	0
4 cast-steel round punches		1	4
3 cast-steel square rimers		1	0
2 soldering irons, ½lb.		5	0
3 rivet sets		3	0
1 beak iron, 18lb. at 1s. 4d.	1	4	0
1 crease iron, 7lb. at 1s. 6d.		10	6
1 funnel stake		6	6
1 hatchet stake		9	0
1 paning hammer		1	0
2 portable forges, with bellows (or American, with fan)	10	0	0
6 forge tongs, various		12	0
2 C.S. 4lb. anvil hammers		4	6
2 each rake, poker, brush and slice ...		12	0
1 drilling machine to fix on bench, and set of drills, ⅛in. to ¾in.	1	13	0
1 fitter's parallel "lightning" vice, 4in. jaws	1	12	0
1 set stocks and dies, ¼in. to ½in. ...	1	10	0
1 leg vice, 4in. jaws	1	2	0
	£21	16	4

A quantity of materials for a year two classes of twelve each would be a for the course suggested:—

14lb. hoop steel, ⅛in.; 1 bar cast s hexagon; 1 bar flat steel, 1½in. × ¼in.; steel, ⅛in.; 1 sheet steel, 16 gauge; 1 s 24 gauge; 4lb. No. 4 iron wire; 2lb. va wire; 2 round iron rods, ⅛in.; 1 2¼in. × ⅜in.; 1 round iron rod, ½in.; 1 r rod, ⅜in.; ½ sheet zinc, No. 10; ¼ sh No. 16; 1 sheet copper, No. 24; 2lb. b No. 9; 2 sheets tin, xx (charcoal); 3 cw coal; 1 bar iron, ½in. × ⅜in.

The total cost should not exceed £3.

SUGGESTED TWO-YEARS' COURSE IN WORK.

A.—LIST OF EXERCISES.

1. Gauging B.W.G. 2. Bending, twisting, wire. 3. Filing. 4. Cutting with chisel. 6. Cutting with shears. 7. Drilling. 8. Solderin ing. 10. Forging—(*a*) drawing and pointing, at red heat. 11. Punching, riveting, and 12. Seaming. 13. Annealing. 14. Tempering. ing sheet steel. 16. Sawing iron and steel. cutting (stocks and dies). 18 and 19. Upsettin ing.

B.—LIST OF MODELS.

1. Crucible triangle (iron wire and clay pipes scriber (brass wire, No. 9). 3. Gardener's l 4. Set squares (brass). 5. Round sponge- 6. Surveyor's arrow (iron ¼in. rod). 7. Boy's with brazed ferrule (iron wire, No. 4). 8. Fe (iron wire, No. 4). 9. Funnel and handle (tin). bucket (sheet iron). 11. Stove rake (iron). meter (copper). 13. Engineer's straight-edge (14. Specimens of tempered steel (steel). 15. (sheet steel). 16. Hard chisels, chipping an (cast steel). 17. Mincing knife (sheet steel). 18 hook (plate steel). 19. Garden trowel (s 20. Try square (iron and steel). 21. Calipers, out (sheet steel). 22. Letter-weight (iron). 23. and washers (iron). 24. Door-handle (iron). stand (iron).

SECONDARY EDUCATION AND TH POSED IMPERIAL COLLEGE PLIED SCIENCE.

By J. H. REYNOLDS, M.Sc.

Principal of the Manchester Municipal Sch Technology.

THE final Report of the Departmen mittee on the Royal College of S a document of high importance, spective of and even transcending its i purpose, which is to establish the pos there should be founded in London an i comparable with the great Technical Hi of Charlottenburg.

Referring to the institutions of w eminent school is regarded as the Report states that, "taken as a whole,

come of conditions which do not obtain country, and the system which they em- not one which could with advantage be ced in its entirety." The conspicuous which these schools and the great uni-, at the hands of scientific teachers of hest eminence, have rendered to the nation, converting her from an agri- and importing country into a formidable cturing and exporting nation, is well ex- d by the classical illustration given in the of the rise and development in Germany chemical industry. The annual value of lucts of this industry during the last thirty has risen from a quite insignificant amount sum of £50,000,000 sterling," and the nents in the field of applied chemistry couraged a like development in the prac- aching of physics with a view to the en- ment of the electrical engineering industry h also Germany has become a most for- competitor of this country.

hat respect, we may well inquire, is the which has led to these results one which ot with advantage be introduced into this ? Are there in Germany, apart from com- military service, some peculiarity of tradi- me special national characteristic, or set mstances altogether foreign to us as a which make the system inapplicable? The gives no indication of this: on the contrary, eds to show that the success which has d the teaching of science as applied to in- pursuits in the technical high schools and ties of Germany is due, presumably, to the ality of the preliminary training required nts before they can be admitted to these ons. They must, in short, "give evidence ng satisfactorily passed through a nine- course of secondary education." "It is such a broad foundation of general know- the Report goes on to say, "that it is red that a student can benefit by the higher c training which is regarded in Germany g essential to the development of her in- ." It is upon her gymnasia, "with their inant classical and literary curriculum," many regard as the most satisfactory train- l upon the *Realgymnasia* and the *Oberreal-* (neither of which classes of secondary attempts specialisation for any occupa- at the universities and the technical high rely for efficient students for their courses ed science.

until a thoroughly good foundation of education has been laid is it deemed for a student to undertake any specialised nd research in the higher branches of c knowledge in its application to industry. courses of preparation in the secondary f education occupy nine years, and are d by four years' specialised instruction in nical high schools or in the universities. ficult to see that there is anything in these nents "which could *not with advantage* be reproduced" in this country. Indeed, it is surely plain that if the success which has attended the teaching of applied science in the technical high schools and in the universities of Germany, and has brought about so great an industrial revolution in that country in the short space of a generation, is to be realised here, it must be done by the adoption of a similar policy.

At a later stage of the Report, referring to the previous statement as to the unsuitability of the German system for adoption in this country, the Committee goes on to say that, however admirable in themselves, there are certain elements in the system which cannot be reproduced here. It then makes the astonishing but by no means unexpected confession that "we cannot require at present, as a condition of admission to our higher technical colleges, the same standard of general education as in Germany," for "such a requirement might seriously restrict the number of students"!

Nevertheless, in spite of this admitted unpreparedness, this paucity of knowledge and training on the part of English students, it is insisted that the country is in urgent need of a greatly increased provision for education of a university grade in the sciences applicable to industry, and of an education "advancing to the highest planes of specialisation and research." How is it possible to secure this, except by accepting the principles and following the methods adopted in Germany and not less so in Switzerland? They simply illustrate the contention that you cannot build with sureness except upon an adequate foundation. If there be no broad, generous education, then, no result of high scientific industrial value in "the higher planes of specialisation and research" can be expected or attained.

The Report clearly shows in many paragraphs that it is to this preparedness for liberal studies that Germany owes her unparalleled advance as an industrial and commercial nation, that it is to this perfecting of men rather than of machines that her success is due, that it is by education, and education alone, combined with a rare discipline and much sacrifice of immediate gain, that the nation, unaided by natural advantages or material resources, has advanced from an agricultural to a commercial and industrial position of the first rank. It is gravely urged in this Report that, although we cannot require at present the same standard of education as in Germany, "because we cannot instantaneously compel ourselves to feel the German love of education for its own sake," although we cannot imitate the uniformity, thoroughness, and simplicity of the German standard, we can at least do one thing—we can make "greatly increased provision for education in the sciences applicable to industry of a university grade and type." Surely this is a perverse view of the question—is, indeed, an anti-climax. It is not difficult to show that the means of high-class training in the application of science to industry, and in scientific research in relation to industrial problems, are already provided far

in excess of the requirements of the number of students properly qualified to take advantage of it.

In the Royal College of Science, in the Central Technical College, which is closely allied with it, in the University of Cambridge, in the Universities of Glasgow and Edinburgh, in the Universities of Liverpool, Manchester (with which is now associated the Municipal School of Technology with its wealth of fine equipment), Leeds, Sheffield, Nottingham, Birmingham, and Durham, and in others that might be named, there already exist, having regard to the high qualifications of the staffs and the character of the equipment, abundant facilities for thorough technical and scientific training for all the students really fit to receive it. What, then, is our real need if we are, in the quaint phraseology of one of the oldest of the treatises in the language on technical training, published at the end of the seventeenth century, "to beat the Dutch without fighting"? There cannot be a doubt that it is the effective organisation of our secondary education so as to bring it within measurable distance of the advance attained by our foreign competitors; it is the inauguration of a missionary effort to induce in the English people a firm belief in the efficacy of education as the most indefeasible of our national assets; it is to bring about a reform in our public schools, so as to fit the *élite* of the nation of all ranks to enter upon the study of science, in all its bearings upon the industrial well-being of the nation, in institutions of the highest character and quality in respect of staff and equipment; and, finally, it is to awaken in employers a keener appreciation of the value of men trained in the methods of science, who are at the same time fully abreast of the latest fruits of scientific research.

Those who are familiar with the standards of entrance to our advanced schools and colleges of science know only too well how low are the standards of admission. Whatever may be the "face" requirements of matriculation, the actual marks required for a pass are extremely low, necessarily so in the present state of our secondary education. It is further well established that the average time actually spent in the secondary schools is not much, if any, more than a third of that required in German and Swiss schools of similar rank—in short, either the pupils go in too late, or they finish too early. In any event, they leave without an adequate training, alike in respect of both time spent and subjects studied. Moreover, the age of admission to our universities and specialised schools of applied science is two years below that of similar institutions on the Continent. In these circumstances, how is it possible that the output, in respect of the quality of the students, can rival that of foreign institutions?

The divorce so marked in this country between the industries and the leaders of scientific investigation contrasts seriously with the close association of manufacturers and scientific men abroad. An instance from the great Paris Exhibition of 1900 will suffice to illustrate this. There was a large and remarkable display of scientific a the result of a combination of all the Ger engaged in their manufacture. The ex placed in charge of three scientific tech perts, who undertook to show and to ex piece of apparatus to inquirers. A vo catalogue in German, French, and En issued, and in the introduction it was st emphasis and appreciation that the re advance in this industry was due in v measure to the close association of the turers with the scientific staffs of the u and technical high schools.

The Act of 1889, giving power to loca ties to establish schools for the pro scientific and technical training—the s Act of 1890, which placed Imperial fund disposal for this purpose—the unifying of the Education Act of 1902—hav contributed, especially the two former, into existence a large number of tec stitutions, some of the first rank, assist and develop others already en the work of scientific training for indus suits. These institutions exist mainly in centres of manufacturing industry, and them make special efforts in respect teaching power and the unique characte equipment to supply the highest gra struction for the industries peculiar district—as, for example, marine engin Glasgow; the textile industries, enginee applied chemistry in Leeds and Manche and steel manufacture in Sheffield; metall engineering in Birmingham.

Much is said in the Report on the research, of the extent to which it is c in Continental and American schools and and of the greater supply of teachin in these institutions especially in thi What, then, would be more fitting or service to the industries of the country the Government to increase the supply, prove, where needful, the quality of th sorial staffs in the schools and college There could hardly be a more justif penditure of the public money. Most institutions are exceedingly well equip laboratories and appliances, and only n tions to their teaching staffs for the pu research to produce results of the high to the industries of the country. F cannot be other than an advantage to closely with the chief industries of the highest means of scientific industrial and thus bring the manufacturers into i relation with it. The teaching and its co applications would react beneficially u other, and make it much more easy for students to enter into active industrial

Our most pressing needs, then, are, better organisation of the means of libe ing, so as to secure a larger supply of prepared students for the universities nical schools and colleges, without whi

le to increase the number of these institu-
ext, to take steps to induce the English
make, on behalf of their sons, the sacri-
ch, it would appear, the German and the
eople are ready and eager to make in
at they may come into effective rivalry
industrial and commercial eminence of
ntry—an eminence won under conditions
o longer obtain to the same extent as
, and cannot be retained unless the
training in science is available to those
in the management and development of
stries.

SCHOOL MUSEUMS.[1]

By Ernest E. Unwin, B.Sc.
t in Nature-study at the University of Leeds.

in the Headmaster's sanctum that I was intro-
Mr. X, the master in charge of the museum
boarding-school that I was visiting.
th Mr. X," said the Head; "he knows far more
museum than I do, and is always delighted to
anyone interested in the subject."
ed my guide across the small piece of playground
ated the museum from the main school block.
d a building that conformed to none of my pre-
ideas of a school museum—I did not see a dark
rded to its utmost capacity with a mixed medley
from a frog in spirit to a carved cocoanut; there
ng of the musty smell of badly preserved or
rcases, but instead a lofty, bare-looking room
a splendid skylight and large side windows.
e of the room was arranged so that a class
eld there or a lecture given, and at the far end
rd could be adjusted for use and a lantern screen
Doubtless the nature-study classes and the
tory and other club meetings were held here.
he sides of the room partitions jutted out,
e space into a number of compartments. The
nts were the various departments of the
nd were labelled INSECTS, GENERAL ZOOLOGY,
EOLOGY, ARCHÆOLOGY AND TOPOGRAPHY, and
SEUM.
round the room above the partitions was a kind
Further speculation was stopped by a voice
e. "Well, what do you think of it?" Mr. X
atching my glances of surprise and wonder with
e amusement.
nuseum doesn't seem to contain very much," I
.
!" he replied, "we don't pretend to rival
ington or the Hope Collection; our aim is quite
one, and we build our museum accordingly."
s your idea of a school museum?" I asked.
ol museum should be mainly—I would almost
y—a local museum, a reflection of school
nd dealing with the life found in the country
school.
consider—and this is most important—that a
eum should be an ever-living and ever-growing
If once the museum becomes complete and
grow the whole value of it goes, and, indeed,
the whole object of a school museum is lost. So, glancing round the various departments, you will not see a 'museum'—as that term is generally understood—you will not see a complete storehouse of objects, but an incomplete, growing, living school museum.

"For instance, come and look at the INSECT department. There, you see, is a chart being made by two or three boys who have taken up the work of noting the habitat of the commoner insects. The work requires considerable observation and knowledge, and is carried on without killing a single specimen.

"Then there are others studying the bees of the neighbourhood. Those specimens are the work of one boy; others are busy with pencil and camera, and much very interesting and useful work has been done. A few have been studying the life-histories of leaf-mining insects, especially those that attack plants of economic value, such as the mangold-fly. Some interesting experiments have been tried, in conjunction with the neighbouring farmers, as to the best means of destroying this and other pests. Aquatic insects, of course, have furnished plenty of work.

"We encourage drawing in line and colour, photography in every branch, and discourage mere collecting. But we realise that among the younger children collecting is their chief work; it can, however, be kept within useful limits.

"It is a crime, and should be everywhere, to bring in any rare specimen, either of animal or plant."

"A museum," I ventured, "is always looked upon as a huge storehouse where you can see examples of all kinds of things, where specimens can be named and objects identified."

"A complete museum," he answered, "is suitable for experts and advanced students only, and we do not number either of those among our children. However, come upstairs, and I will show you our 'Reference Gallery.' I'm afraid," added my guide, as we were going up the stairs, "that the majority of people would say that this was our proper museum, and would wonder why we pack it away up here and keep it comparatively private."

I found that the gallery, which I had already noticed, contained insect-cases, cases of stuffed birds, a shell collection, an herbarium, maps geological and topographical, larger specimens, including skeletons of the commoner animals, historical objects, and, down one side, the wall was divided into vertical divisions representing millions of years of geological time, an attempt to reproduce on a small scale Dr. Hutchinson's idea of the "Space-for-Time" system, illustrated by typical fossils of each period.

"We consider that only a limited number can really use such a collection as this, and even then the value is of quite second-rate importance; we therefore keep it apart from our school museum proper.

"Such a gallery as this serves another purpose. Objects prepared for the school museum downstairs can be bought for this collection; in that way this part is getting more and more complete by the addition of new specimens and the replacing of poor ones. But the more complete it becomes, the less use will it be to the ordinary boy or girl."

"You said just now that a school museum should be ever growing; how can that be?"

"Well, you must remember that this collection up here is not our school museum. This 'Reference Gallery' will necessarily become more and more complete, more and more dead, as time goes on; but the museum downstairs is a *living thing*, it will *never* be finished, it is always being started afresh. A bonfire now and then easily gets rid of much material that has fulfilled its purpose and is encumbering the ground. A periodic clearance is needed

[1] read at the annual conference of the Friends' Guild of
l in Dublin, January, 1906.

to make way for the fresh endeavours of fresh children. It is the work put into the museum, and not necessarily the museum itself, that is of value. A well-known professor has said: 'Admiration of other people's work soon ceases to stimulate,' whereas what is more stimulating to a boy or girl than to help build up a school museum?"

We had come downstairs again by this time, and my attention was directed to the department marked SPECIAL MUSEUM.

"What is your SPECIAL MUSEUM for?" I asked.

"Oh, very frequently in the course of our nature-work—in the history, literature, or chemistry classes—some subject of special interest comes up. We then set to work to make a little special museum dealing with that subject. Of course it is merely a temporary collection, sometimes lasting a term, often less.

"Last term, 'Protective Colouration' was the subject. The children were very keen about it, and several very interesting examples were brought in.

"This did the children far more good than if we had had a beautifully set-up case of specimens, both British and foreign, for them to see any day of the week. It is *after* they have built their own museum on 'Protective Colouring' that a visit to such a place as South Kensington to see the beautiful cases in the large entrance hall would be of value.

"'Moorland plants,' 'Seashore burrowers and borers,' 'Simple apparatus, physical and chemical,' 'Saltmarsh flora,' and 'Old costumes of the people,' are a few of the subjects that the SPECIAL MUSEUM has dealt with. In the case of literary or historical subjects, drawings and old prints form the chief part of the show.

"This term we are collecting evidences of prehistoric man, and before long we hope to have a good show of arrow-heads, pottery, and other cave deposits—mostly borrowed—as well as drawings illustrative of the subject.

"Then you must see our Vivarium."

I had already noticed several small aquaria on the window-ledges in the zoological departments, but I was hardly prepared for the grand display in a little, very airy, and well-lighted room into which Mr. X took me.

Here were two large aquaria and a host of smaller ones in which all kinds of aquatic animals and plants were living.

On the shelves round the room was a number of well-stocked breeding-cages, boxes of seedlings, and one or two spacious cages for pets—guinea-pigs, mice, a hedgehog, land-snails, frogs and toads, all looking very happy and all very clean.

"We believe," answered Mr. X, in reply to my questions, "that this is one of the essentials of a successful school museum. A vivarium keeps before the children the most important fact that they are dealing with living things, and that most of the interest is lost as soon as the plants become hay and the animals mummies."

There was another small room into which I was taken; this was the work or preparation room. But just then Mr. X was called away to some duty, and I continued my observations alone.

There was a bench for rough work, such as skinning or modelling, a large saucepan for preparation of skeletons, and a small bench with a set of tools for any little woodwork jobs. I heard afterwards that the boys themselves had made most of the cases, shelves, and cupboards in the museum.

Then there were two large cupboards containing the stores of bottles, pins, cardboard, nets, and all the necessary things for both outdoor and indoor work. Several microscopes were kept here, and I had evidences of good microscopical work.

I wandered about the museum for a time d all I saw, and then examined their museum books were arranged under heads and subsponding to the departments of the museum.

Some were books of reference and had t the museum, but others could be taken out and study elsewhere.

Here, then, was a new type of museum which the more I saw the more I liked. An museum, nothing elaborate, everywhere the dividuality, and containing unmistakable evid work of a large number of girls and boys thoughts turned to the master who had been round. I remembered his enthusiasm, the ke his work. To make a school museum a s must be a directing personality behind the s subject *can* do without the vivifying power teacher?

Mr. X was not afraid of a poor show, or would look to an outsider to be a poor sh able to see behind the scenes—to appreciate of things—this museum was of far more va largest possible collection of odds and ends l from one generation to another. If the p school museum is to make a display of obj from every available source, you must give of making your school museum an educationa

The terms "museum" and "school museu interchangeable. I had not realised that until Mr. X's school museum. What is true of a institution which supplies the needs of a very of people is not true of a small private local s The aims of a school museum and a public quite different, or at least should be.

I have now given, in a very rambling wa as to what a school museum should be. I say that the museum referred to exists in the only, although there are one or two schools he that attempt to carry out the main principles l

A school museum is a success in so far as independence both of thought and action in t is not the museum that is important, it is not you can show rare objects of all kinds th school museum a success, but it is the energy, the contrivance, the work of the children in b that make it invaluable.

* * * * *

The scope of a school museum should be can be managed conveniently. Natural hist will more readily lend themselves, but the o must not be neglected.

A school museum should belong to ever the school. The archæologists, the entom geologists, the workshop boys, those intereste those clever with pen, brush, and camera, al that the museum belongs to them and needs th

I have given in the opening paragraph or paper my ideas as to convenient buildings, b of a school museum can be started and carrie fully in an ordinary schoolroom. Of cour building would be a great advantage, but if build it will be the millennium before so schools have a school museum at all.

As few restrictions as possible should be p use of such a museum—let it be as free as schoolroom. A school museum should provid

on all the school societies. It should counter-
estion of jealousy between, say, the naturalists
æological boys. It should provide an under-
ce directing energies that are apt to be rather
the best possible channels without taking away
freedom from those energies.
ay many would be led to undertake some
stigation or observation that would require
genuity, and independence to carry to a
nclusion. I have not formulated definite plans
nuseums. I believe it is as much a subject
ool to work out its own methods and details
dy is.
thoughts that I would leave with you are :—
n your minds the idea that a school museum
sarily be a collection of all kinds of objects
s of the world.
ol museum be a "local" one.
lise that it is the work done by the children
lue.
afraid to make a bonfire now and then to
und.
iastic yourself, and soon you will have the
enthusiastic with you.

REGISTRATION OF TEACHERS.

for 1905 of the Teachers' Registration Council
published. The total number of applications
for registration up to the end of 1905 was
e applications resulted as follows :—Registered
women, 5,346), 10,459; rejected, 2,849; with-
not dealt with, 180. During the single year
ions for registration were received from 1,652
43 women, and of these 1,483 and 1,305 re-
re registered; while 784 applications were re-
withdrawn.
e to Column A, the Council repeats its opinion
ent card-register is out of date and useless as
cord of certificated teachers. Pending the de-
Board of Education as to how the expense of
f this column is to be met, no steps have been
er on the official cards the information which
ently supplied.
il is agreed in considering that Column A, as
y the Order, serves no good purpose, and that
to maintain it in its present form should be
It is pointed out that under existing conditions
ticable to frame and to publish an alphabetical
achers such as appears to be contemplated by
1899. This defect prevents the use of the
an authoritative standard of reference, and
e whole movement for registration in the eyes
rofession and the public.
the progress of registration in Column B, the
that in January, 1905, the Council was invited
e Consultative Committee with full statistics
ss of registration up to that date, together
gestions which the Council desired to make
to its future working. In the memorandum
furnished to the Consultative Committee the
occasion to re-emphasise certain significant
ing the progress of registration.
ensions of the Council centre round two con-
first, that the number of men applicants who
evidence of having undergone any form of
training previous to entering on secondary-school teaching is entirely disproportionate to the needs of the profession; secondly, that returns received from secondary training colleges make it obvious that this disproportion threatens to continue. At the end of 1905 the Council have reason to consider that their anxiety is well founded. Of the 10,459 teachers now registered in Column B, 937 have obtained one of the teachers' certificates mentioned in the Order in Council, of whom only 93, *i.e.* less than 10 per cent., are men; of the 937 teachers referred to, 409 have undergone a course of training at one of the institutions mentioned in the Order, of whom only 13, *i.e.* less than 3½ per cent., are men. Again, a repetition of the inquiry addressed last year to authorities of these institutions has elicited that in December, 1905, the number of male students in residence at one or other of fifteen of these institutions (from the one remaining no reply was received) reached the total of 123. The number is nearly double that of the corresponding one for 1904; but when it is noted that a single Roman Catholic institution accounts for as many as 53 of the students in question, the general outlook cannot be held to have materially improved.

The conclusion is further supported by the fact that the opportunities furnished by the Order of carrying on the training of secondary-school teachers outside of training institutions continue, in the case of men, to be entirely neglected.

The Council reaffirms its view that this continued neglect of training is due to inability to incur the expense of a training course rather than to failure to appreciate the value of professional preparation, and until the financial prospects of secondary-school teachers improve, this difficulty will remain to be reckoned with. Moreover, it is unlikely that local authorities will bring pressure to bear by recognising in a marked degree the work of a trained as compared with that of an untrained teacher until registration and the professional training attendant on it are upheld by legal sanction. It cannot in this connection be overlooked that the current "Regulations for Secondary Day-Schools" under the Board of Education do not contain any reference to the register; yet it is highly questionable whether the movement towards registration will become general until the Board is prepared to state that no secondary school in which the headmaster and a fair proportion of the staff are not registered teachers will be eligible as a grant-earning institution. Other than a gradual enforcement of training is necessarily prohibited by the fact that the total number of trained teachers in the secondary branch of the profession is at present a comparatively negligible quantity. But should the application of the permanent requirements, under which no untrained teacher will be eligible for Column B, be allowed to pass without some announcement from the Board which will cause the profession to realise the necessity of registration, there is a risk that a general neglect of the register will ensue.

But though unable to regard the stability of registration as assured, the Council does not wish to suggest that its experimental stages are proving devoid of encouragement. That the training of women teachers has received considerable impetus cannot now be questioned, nor is it the case that the standard of academic attainment in the profession at large has remained unaffected. It is a fact not without significance that an appreciable number of teachers of some years' standing have improved their academic qualifications in order to gain admission to the register.

These points are among many which indicate that registration may yet become an important means of securing professional efficiency. Moreover, with regard to the in-

fluence exerted by registration on its administrative side, the Council has every reason to think that the fact that the status of a school is improved when it receives "recognition for the purposes of registration" is a powerful incentive not only to the maintenance of satisfactory conditions in the schools which succeed in passing muster, but also to the raising of those which fall below the requisite standard. One of the most gratifying circumstances noted by the Council is that as many as thirty-three schools in England and Wales to which recognition was in the first instance refused have since taken steps which have enabled them to be accepted.

OXFORD LOCAL EXAMINATIONS. SET SUBJECTS FOR 1907.

Preliminary.

Religious Knowledge.—(*a*) I. Samuel (chap. i.–xviii.), (*b*) St. Matthew (chap. i.–xviii.), (*c*) Acts (chap. i.–xii.), (*d*) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or the Outlines from 1399–1603, or the Outlines from 1603 to 1714, or the Outlines from 1714–1815, or the Outlines from 1815–1871.

English Author.—Either (*a*) Scott's "The Talisman" or (*β*) Stevenson's "Treasure Island." Either (*a*) Kingsley's "Water Babies" or (*β*) "Select Poems from Tennyson" by George and Hadow (i.–xxi.) (Macmillan).

Geography.—(iii.) The geography of one of (*a*) England and Wales, or (*b*) Scotland and Ireland, or (*c*) India.

Elementary Latin.—"Tales of Early Rome" (sections i.–iv.), by J. B. Allen (Clarendon Press).

Elementary Greek.—Marchant's "Greek Reader," vol. i., pp. 1–25 (Clarendon Press).

Elementary French.—Either Pierrault's "Contes des Fées," edited by Berthon (Hachette), or Gozlan's "Le Châteaux de Vaux" (Clarendon Press).

Elementary German.—Buchheim's "Short German Plays," second series, pp. 1–42 (Clarendon Press).

Junior.

Religious Knowledge.—(*a*) I. Samuel, (*b*) St. Matthew, (*c*) Acts i.–xvi., (*d*) Prayer Book.

Ancient History.—Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—(*a*) Outlines of English History from 1066–1399, with special questions on the Reign of Edward III.; or (*β*) Outlines of English History from 1399–1603, with special questions on Foreign Affairs during the Reign of Queen Elizabeth; or (*γ*) the Outlines of English History from 1603–1714, with special questions on 1640–1658; or (*δ*) the Outlines of English History from 1714–1815, with special questions on the period 1784–1815; or (*ε*) Outlines of English History from 1815–1871, with special questions on the period from 1832–1859.

Early English History.—Outlines of English History from 55 B.C. to 1135 A.D.

Foreign History.—Outlines of General European History from 1598–1715.

English Literature.—Either (*a*) Stevenson's "Treasure Island" or (*β*) Shakespeare's "Twelfth Night." Either (*a*) Shakespeare's "Coriolanus" with North's translation of Plutarch's "Coriolanus" (Clarendon Press), or (*β*) Shakespeare's "As You Like It," or (*γ*) Scott's "Talisman." Either (*a*) Byron Harold," Canto iii., or "Select Poems of by George and Hadow (Macmillan). Either (Arnold's "Merope" (with Whitelaw's tra the Electra), edited by J. Churton Collins Press), or (*β*) Johnson's "Life of Milton" a of Human Wishes."

Geography.—General: (i.) Geographical Prin British Isles, (iii.) one of (*a*) Mediterran (*b*) Monsoon region of Asia, (*c*) Atlantic North America.

Latin.—Cæsar, De Bello Gallico V.; Virgil, Ae

Greek.—Greek Reader, vol. i., Marchant Press); Scenes from Antigone (Clarendon Pr

French.—Either Chateaubriand's "Mémoire tombe" (Clarendon Press) or "Histoire scrit" by Erckmann-Chatrian.

German.—"Heute mir, morgen dir" (Clarendo

Senior.

Religious Knowledge.—(*a*) I. Samuel, (*b*) St. (*c*) St. Matthew in Greek, (*d*) Acts, (*e*) T to the Galatians and of St. James, (*f*) Perry' of the English Church," Second Period, (sixth edition, Murray).

Ancient History.—Outlines of Roman History f 242 B.C., with special questions on the First

English History.—(*a*) English History, (i.) 1066 1399–1603, (iii.) 1603–1714, (iv.) 1714–1815, 1871.

Early English History.—Outlines from 55 B.C. to

Foreign History.—Outlines of General Europe from 1598–1715.

English Literature.—Either (*a*) Milton's "Sam istes" and "Lycidas" or (*β*) Shakespeare's Night." Either (*a*) Shakespeare's "Coriola North's translation of Plutarch's "C (Clarendon Press), or (*β*) Burke's "Reflecti French Revolution," pp. 1–107 of Payn (Clarendon Press), or (*γ*) Spenser's "Faery Book II. Either (*a*) Byron's "Childe Harol ii., iii., or (*β*) Tennyson's "The Lady of S other Poems" and "English Idylls and othe or (*γ*) "Selections from Addison's Papers con the *Spectator*" (edited by T. Arnold), sect 3, 7 (Clarendon Press). Either (*a*) Matthe "Merope" (with Whitelaw's translatior Electra), edited by J. Churton Collins Press), or (*β*) Johnson's "Life of Milton" an of Human Wishes."

Geography.—(i.) Principles of Geography, (ii Empire, (iii.) one of (*a*) Europe, (*b*) Asia, America (including West Indies).

Latin.—(*β*) Livy V., or (*γ*) Cæsar, De Bello Ga VI.; and also (*β*) Horace, Odes, Book Epistles, Book II., or (*γ*) Virgil, Aeneid IX.

Greek.—(*β*) Plutarch, Coriolanus, or (*γ*) Thucy chap. i.–l.; and also (*β*) Sophocles, Antigo Euripides, Medea.

Horatius and other Stories. Adapted from G. M. Edwards. With notes and vocabulary. x (Pitt Press Series.) 1*s.* 6*d.*—We are glad to another school-book by Mr. Edwards. His "Sto Kings of Rome" was an admirable beginners' this is as good. We wish it all success. criticism we would offer is, that for boys in this vowels long by nature should be marked in the t

TORY AND CURRENT EVENTS.

rôle of the city may yet be a great factor for the world. . . . Here from Paris, the very Mecca spel of the brotherhood of man, I would fain offer other great cities and capitals of the Old World iew a fraternal appeal, without reserve, indicating h, in my humble opinion, depends on them and operation," &c. So said the chairman of the County Council in the beginning of February last. pass with a mere mention our wonder that Sir all should speak of Mecca rather than Jerusalem ource of a gospel of brotherhood, because our are running to Hellas and the Hanseatic league. been the *rôle* of the city—the πόλις—in the past the world? Hellas knew no empire, and the sian war was fought to destroy the hegemony , as the Persian wars had been fought earlier absorption in the dominions of the Great King. towns and cities knew an empire that was power- w and order—commonly called peace—and united rotection for commerce from the petty wars of Which is Sir E. Cornwall's ideal?

itions have been presented to the present House ons asking that elections may be set aside on the bribery and corruption. We note, first, that they *ons*, not demands as of right. Theoretically, the Commons could legally refuse them without iven. Secondly, they are presented to the House ons, not to the Chancery, from which the writs d, and to which they are returned. So, since the James I., a court has no power to revise the re- its own decrees, and the House then wrested king the power of revising returns. That surely r in jurisdiction. But, thirdly, the House does as it did in the seventeenth and the first half of eenth century, trust itself to decide these elec- ions. It does not even, as in the later half of eenth and beginning of the nineteenth century, he inquiry to committees of its own body. It m to certain specially appointed judges, who re- opinion to the House. That opinion is now dopted. "Write an essay on the legal aspects ctive advantages and disadvantages of these three

re claiming for the Parliament elected this last hat it is, to a large extent, a Nonconformist body, rationists are hoping for much alteration in the ion of the Established Church. We leave the prac- tion to the politicians, and think of parliaments st history that may be called "nonconformist." not, of course, give that name to the Long t of Charles I., for its members, though opposed ecclesiastical tendencies which were favoured at ere thoroughly convinced that they represented ons of the majority of the Established Church. n they abolished episcopacy and decreed that the England should be changed "according to the God and the example of the best reformed they were not nonconformist, for they were the t party. Even the "Little" parliament of 1653 wo parliaments of Oliver Protector are disputable spect, for, though Oliver's power was but mili- was the sole power, ecclesiastical or civil, then The only indisputably nonconformist Parliament tory, therefore, is one which was merely contem- t, viz., which was to have met in 1688–9 under es of James II.

It is proposed to alter the rules of procedure in the House of Commons. In the course of the preliminary conversation which preceded the appointment of a Select Committee for the purpose, Mr. Redmond "mentioned some practical changes which would, he thought, conduce greatly to the comfort and convenience of members, *especially those who were not well off* and who resided at a distance from Westminster." What are, and have been, the legal and actual requirements for qualification for membership of the House of Commons? In the Middle Ages, burgesses represented burgesses, citizens citizens, and knights of the shire, who must be "belted knights," represented the forty-shilling freeholders of the country. They were paid wages, but we do not suppose these wages covered all their expenses. When, in the fifteenth, and still more in the sixteenth, century, membership of the House became attractive for political or pecuniary reasons, men were willing to serve who could afford to do without wages. Then in the seventeenth and eighteenth centuries seats became valuable in the market, and no one could hope to enter the House who did not possess wealth or could not find a patron. So grew the tradition which is now, in days of Labour members, gradually passing away. What of the future?

ITEMS OF INTEREST.

GENERAL.

In a letter addressed to the Principal of King's College, London, the Board of Education reiterates its determination to lessen the number of candidates for a university degree. The reasons given are: (*a*) degree work does not fit a man for primary-school teaching; (*b*) a large number of candidates fail; (*c*) the public money is not intended to be used for this purpose. The Board goes on to suggest that universities may, if they please, modify their examinations. Now, if the Board knew the inner life of training colleges, it would be aware that degree work has been forced on the students by the insufficiency, the variability, and the valuelessness of the Board's own examinations. Some years ago the certificate was of value; but the manifold changes and the constant uncertainty have reduced the certificate to a shadow. Will it be believed by the outsider that now in March the training colleges do not know for certain whether the list this year will be printed in three divisions or in one, *i.e.* whether it will be an honour list or a qualifying pass list? There is no other examination in England which treats its candidates thus.

It is suggested by the Board that degree work prevents a man from doing other work, while the fact is that the degree work is extra work, the work which the Board requires from all being examined and reported on by the Board itself. It is suggested further that degree work involves a strain, while the fact is that the optional subjects allowed by the Board for its own examination cover the same ground as the degree work, and certainly do not fit a student for primary teaching either more or less than the university work. The statement that a large number of students fail is true—20 per cent. failing in day and 40 per cent. in residential colleges (we take the Board's figures)—but it is not stated that the percentage of failures is much less than that for the whole kingdom, which for the past three years ranges from 38 per cent. to 60 per cent., and is about 50 per cent. for Intermediate examinations (we take the University's figures). The fact that so many students do go in and fail at the University's examinations shows how lamentably inadequate are the provisions of the certifi-

cate. A certificate examination worthy the name, with the results arranged in honour or distinction classes, and seriously tightened up, would be far more likely to accomplish the Board's purpose. Mutual misunderstanding among great educational agencies and an unwillingness to take full responsibility are mainly answerable for the present policy, the immediate result of which will probably be a further depletion of the ranks—already emptying—of the men teachers.

A LARGELY attended conference, convened by the Association of Headmistresses, was held on February 24th to consider resolutions as to the education and training of girls who have been awarded scholarships tenable in secondary schools in preparation for teaching in elementary schools. Miss F. Gadesden, president of the association, welcomed the inspectors deputed to attend by the Board of Education, many members of the London County Council education department and inspectorate, the principals of training colleges for elementary teachers, the heads of many pupil-teacher centres, and the officials of various educational associations. The following resolutions with reference to girls preparing to be pupil-teachers—that is, girls up to sixteen years of age—were carried :—(1) That all pupils from elementary schools should, before entering a secondary school, (*a*) be interviewed by the head of the secondary school, who would judge of their general fitness, and, if she deemed it desirable, examine them by means of papers, and (*b*) be examined by the medical adviser of the secondary school, and refused if lacking in essentials; (2) that for the present it is in the best interest of elementary schools that the ranks of teachers in these schools should be largely recruited from pupils who have received all their education in secondary schools, and have gained probationer scholarships from those schools; (3) that girls preparing to be pupil-teachers should attend the secondary school for at least five years, from eleven to sixteen, or from twelve to seventeen, years of age.

THE second subject discussed by the conference was the needs of actual pupil-teachers, girls from sixteen to eighteen years of age. It was resolved (1) that it would be to the best interests of the pupil-teachers that they should not form a separate class, but be in such a proportion to the ordinary scholars that the influence of the secondary school should predominate; (2) that their course in the secondary school should, so far as possible, be continuous from twelve to seventeen years of age, provision being, however, made for some practice in the elementary school at a sufficiently early age; and (3) that the various half-time systems fail to afford facilities for adequate time for the proper education of the pupil-teacher at a centre or higher school, and to secure sufficient opportunity for learning the art of teaching. The curriculum and examinations of girls preparing to be pupil-teachers and of actual pupil-teachers formed the basis of later discussion. The conference resolved (1) that it is advisable to divide scholars into three classes, and arrange their curriculum accordingly: (i.) those who will ultimately take a degree; (ii.) those who will take a matriculation examination or its equivalent; (iii.) those who will take the "preliminary examination for certificate" (*i.e.* the King's Scholarship examination); and (2) that a sound English education is of much greater importance than a knowledge of many subjects.

THE report of the committee of the Cambridge University Day Training College for the year 1904–5 shows that in June, 1905, the college contained 54 students: 15 in the third year, 23 in the second, and 16 in the first. Of the present students, 13 hold scholarships awarded by bee Hall Pupil-Teachers' Scholarship Committee hold scholarships, exhibitions, or sizarships a colleges.

THE Board of Education has just issued a list c five holiday courses which will be held on the at different times during the present year, but the summer months. Six of the courses are in viz., Greifswald, Jena, Königsberg, Marburg, and Salzburg; four in Switzerland, viz., Geneva, Neuchâtel, and Zurich; one in Spain, viz., Santa the rest are in France, viz., Besançon, Tours, Paris, Grenoble, Nancy, St.-Servan-St.-Malo, sur-Mer, Boulogne, Caen, Bayeux, Granville, Li Dijon. The paper issued by the Board gives th each course, the fees, return fares from Londc cost of boarding, principal subjects of instructio of local secretary, and other details of importa tending students. Copies of the paper can be free on application to the Board of Education Li Stephen's House, Cannon Row, Whitehall, Londo

THE success of the first International Congress Hygiene, held in Nuremberg in 1904, in bringin workers of all countries and in giving an impe study of this subject, was very great. One of t of the Nuremberg congress was that teachers, me architects, administrators, and others learnt how their work and duties were correlated. One of of the congress was to co-ordinate the efforts various workers and to aid each separate inves enjoy results and experiences collected from w and great populations under the most diversified c In order to prepare for the second International on School Hygiene, which is to be held in L August, 1907, the first step to be taken is the of a local committee for each town or district, w mittee will approach the authorities of the Board tion and the Treasury, the leaders of educatio ments, the chairman of education committees, e teachers, and medical men who have experience ing children. These local committees will be co from London under national committees, which all in their power to promote the success of the They will endeavour to obtain the co-operation ar of Governments, education authorities, and com institutes and societies, and induce them to part delegating representatives to the congress or b representative exhibits to the School Hygiene which is to be arranged. It is proposed tha sectional meetings and lectures, there shall be hel three general discussions. The English committ suggestions as to the subjects under this head first programme of the congress, with a list of th national committees, the subjects of reference fc discussion, and details as to arrangements of the will be issued shortly. The president of the Lo gress is Sir Lauder Brunton, and Dr. James Ker G. White Wallis are acting as honorary secret communications relating to the School Hygiene should be directed to the Secretary of the Royal Institute, Margaret Street, London, W.

GRANTS in aid of secondary schools in London ing to £66,895—namely, £62,850 for mainten £4,045 for equipment—have been approved by th County Council for the coming year. There are two secondary schools which have come under the

tion and control. At the meeting of the h 6th, the Education Committee presented with the provision of secondary school for the holders of the Council's scholar- ort shows that the total number of places to be found in September, 1906, roximately, at 1,150 boys and 2,800 girls. er of the Council's scholars will increase, out, from the present 2,015 boys and 3,686 ,705 boys and 7,338 girls in 1909–10, when hed its normal figure. Adding to this an (300 boys and 1,200 girls) for the pupil- y then to be in secondary schools, there is places (4,005 boys and 8,538 girls) which ll require to have at its command by . The lack of school places presses most poorest children, whose parents are un- travelling expenses. The committee has which indicate that there will be—taking ole—enough places in September next for th practically no margin. The deficiency irls is more urgent and more serious. It aggregate, to about 1,200 places, and it ally all parts of London except the City .

e needs, the committee urges that the County Council secondary schools shall that a new elementary school in Woolwich, for elementary education, shall be utilised school for girls; and in the south-western posed to erect suitable iron buildings for commodation of two new secondary schools the erection of permanent buildings. As ply of boys' schools, the report states that sing usefulness of the former Grocers' Council's administration, the building of versity College school at Hampstead, and of some other schools, the Council may mmediate action within a narrow compass. litional school places for boys which must 10, the majority will probably be provided, from the Council, in the enlargement of It is not, however, possible for the es to effect its object by the offer of assist- s of existing schools who are prepared to enditure from their own funds. The com- ates that it has considered the question of f obtaining additional accommodation by atively small grants to the existing second- some of the proposals for extensions where dy overcrowded, the result may probably ncrease the present accommodation, but it ncrease the efficiency of the teaching. In nstances, however, in which extensions are esult will be a considerable increase in and it will be possible to allot to the rs a larger number of places at a cost f proportion to the cost of pursuing the of erecting new schools for the purpose.

Committee of the London County Council her report, and this one deals with the renticeship. The old-fashioned plan with miums has almost died out, and the report ective scheme of scholarships is the only titute. The plan suggested by the com- mmarised thus: The intelligent boy leaving the elementary school will have offered to him a choice of two courses of instruction, both of which will assure him an all-round training in a skilled trade. The first, or "part-time" system, provides that he shall spend a portion of the week in the workshops and the remainder in the day technical school; the second makes use of evening classes. In certain cases, scholarships carrying free tuition and a maintenance grant will be awarded to the day students to compensate for the small earnings received during the years of training. Scholarships of smaller value will be allowed to selected evening students in order to encourage regularity of attendance. Any efforts intended to complete the training given in our schools, by scholarships or by parents' fees, are to be welcomed, and in the former case, indeed, are necessary if the nation is to reap any real advantage from its expenditure on school scholarships.

A London Inter-collegiate Scholarships Board was constituted in 1904 with the approval of the governing bodies of University College, King's College, and the East London College, for the purpose of holding a combined annual examination for entrance scholarships tenable at these colleges. One examination was held last year; the next will take place in May. No candidate will be admitted to the examination who has not passed the London Matriculation examination, or an equivalent. Application should be made to the Secretary of the Board, University College, London, for forms of entry, which must be returned not later than May 1st next.

The annual general meeting of members of University College, London, was held on February 21st. Lord Reay occupied the chair. In moving the adoption of the annual report, Lord Reay referred particularly to the benefaction of Mr. E. G. Bawden, whose gift of £16,000 had completed the fund of £200,000 required for incorporation; also to the acquisition of the library of the late Mr. F. D. Mocatta, transferred to the college by his executors and the Jewish Historical Society. He directed attention to the list of benefactions, including those of the Fishmongers' and Drapers' Companies, and to the improved financial position of the college on account of the permanent increase in the Parliamentary grant. He went on to say that this was the last annual general meeting under the old order. The object of the incorporation, under which the college will to a certain extent lose its independence, is to secure the good of university education in London as a whole. All are convinced that unless and until the University of London obtains direct control of all the chief centres of university education in London, the task committed to it of organising and directing university education in London cannot be completed. It is, therefore, with the greatest satisfaction that he has heard that the authorities of King's College are proposing to follow the example of incorporation set by University College.

A circular issued in France by M. B. Martin has reference to the supervision of classes during intervals between lessons. Some time ago an accident took place, as the result of direct disobedience, at a provincial school. The parent of the injured child, who caused the accident, sued the teacher in charge and obtained damages under the Civil Code. The professors at one of the *lycées* lately sent a petition to the minister asking for dispensation from the duty of supervision. In reply, M. Martin says that the regulations are framed with a view of preventing the interruption of other classes at work and such recreation as might be termed horseplay. The main point, however, seems still unsolved —whether a master should be financially liable for an

accident to a pupil. It would appear, however, that there are other reasons for the opposition of the professors. Some of them consider it undignified to undertake the work of a *répétiteur*. Others are aghast at the difficulty of recognising the cause of mischief in a throng of two hundred boys. And others, again, consider that the circular undermines their moral authority, for, if a disturbance occur and a professor intervene, he may become the butt of his pupils in case of failure to quell it. M. Martin's comparison of the supervision in a playground with the conduct of excursions and school journeys is, they all declare, unsound. On a school journey the pupils are those of the professor's own class; they listen attentively to the observations which he has to make on minerals, plants, and flowers, and never think of indulgence in surreptitious amusements.

In October last the town council of Nice arranged that every new entrant at the town schools should be supplied with a note-book of hygiene. In it there are entered personal details of the owners and a *curriculum sanitatis*, with a brief *résumé* of the principal rules of health. An abbreviated duplicate is kept for reference by the medical inspector of the school. The latter contains, under certain headings, more information than is divulged to the parent, so that the latter need not take alarm unnecessarily. This proceeding is in some way the counterpart of Dr. Kerr's efforts in the treatment of measles in those schools of the Woolwich district which are under the London County Council.

The Teachers' Guild has issued a preliminary notice of its Modern Languages Holiday Courses for 1906. Courses are to be held at Tours, Honfleur, Neuwied, and Santander. At Tours, an elementary course will be provided under the direction of M. Marjault, and the subject chosen is "Explications de locutions proverbiales et phrases toutes faites pour aider à l'intelligence des textes et de la conversation." An advanced course at Tours is being arranged. Elementary and advanced courses will be held at Honfleur; the former will be superintended by M. A. Blossier and the latter by M. A. Leconte. The subject chosen is "La Littérature Française de 1550 à 1900, avec l'étude spéciale des auteurs prescrits par les programmes de l'Université de Londres pour les différents examens." At Neuwied, Prof. A. Biese will conduct elementary and advanced courses. The elementary lessons will consist of phonetics, pronunciation, and conversation. The subject in the advanced course will be "Goethe's Lyrik und die Nachgoethische Lyrik." At Santander, an elementary course will be conducted by Señor Don Ramón Noval y Cagigal. Fuller information may be obtained from the Secretary of the Guild, 74, Gower Street, W.C.

Holiday courses in French for the benefit of foreign students will be held again this year at the University of Grenoble. The courses will extend over four months, from July 1st to October 31st. The directors of studies during July will be MM. Morillot and Besson; in August, M. de Crozals; in September, M. Rosset; and in October, MM. Rosset and de Crozals. Full particulars as to these courses of study may be obtained from M. Marcel Reymond at the University.

The University of Dijon offers again this year summer courses for foreign students. A full programme and favourable terms have been arranged. The courses will extend from July 1 to September 30; and full particulars may be obtained from the Secretary, M. Ch. Lambert, 10, rue Berbisey, Dijon.

The Goldsmiths' Company has made a grar to the building and endowment scheme for Bed London. The Grocers' Company has granted same purpose. Three more donations towards special list of £100 contributions have been r the last announcement—from the Duchess of ! Mr. and Mrs. Henry Yates Thompson, and M James Bryce.

The Council of the London Chamber of C the recommendation of its Commercial Edu mittee, has decided to hold an examination i The syllabus will be the same as that for m languages.

In order to improve the handwriting given of schools, and to meet commercial requireme this neglected subject is concerned, the Comm tion Committee of the London Chamber of C resolved that a separate examination in hand be added to the present syllabus for Junior ca that the first examination in this subject shal May 30th, 1906. The examination will be si held for boy clerkships in the Civil Servi consist of tests in rapid legible writing. Sep cates will be granted for success in this subject

In the new House of Commons there are who graduated at Oxford, and ninety-one who at Cambridge. Seventeen are graduates of one of the Victoria University. There are studied at Edinburgh, eleven at Glasgow, Andrews, and one at Aberdeen. Dublin U thirteen graduates in the House, the Roya three, and the old Queen's University three. versity College sends one member to Parliame universities are represented as follows:—T Ontario, Montreal, and Melbourne one members studied at Harvard; and the follo universities are also represented:—Zurich, Bor (two each), Leipzig, Heidelberg, Laval, Bru and Baden (one each).

The next summer meeting for universi students and others will be held at Cambridg The arrangements for the scholarships and ot form to a large extent a new feature of the The meeting will be divided into two parts. extend from August 2nd to August 15th inclu from August 15th to August 28th inclusive liminary announcements show that the princi study will be the eighteenth century, especial 1714–1789. The lectures will group them history, English literature, art, France, p many of the lectures given in French by Fre Opportunities of study will also be offered education, social reform, and theology, and special classes for foreign students. Inquirie information should be addressed, endorse Meeting," to the Rev. D. H. S. Cranage, Syr ings, Cambridge.

A course of lectures and practical work will be held in Oxford between August 7th a vided a sufficient number of names is sent in The course is primarily intended for teache and map demonstrations will be given in t Geography for three or four hours each mor afternoons will be occupied by demonstration of surveying and map-drawing in the field,

aces of special geographical interest—one of is will be to a more distant district, and take y. A few evening meetings will be arranged ions, especially on the teaching of geography. l deal with local geography, world geography, spects of historical and economic geography. ending students, with a note of aspects of which they are most interested, should be *s possible* to the Reader in Geography, Old ilding, Oxford, as the number of those who in the practical demonstrations in the labor- is limited.

r, 1904, Mr. C. H. Firth, Regius Professor story at Oxford, took the occasion of his ure as an opportunity to deliver a very amaging attack upon the existing Modern of the University. He pointed out various such as its neglect of literature, of economic the history of the development of the British is gravest accusation was that it does little ans, that it does not accustom its members to nal authorities, does not require a knowledge guages, does not inculcate the mental habits Now comes Prof. Oman, fresh from twenty ial work, with a vigorous defence of the y School and a powerful apology for the old cture has been published by the Clarendon lds that Oxford "is a place of education as of research," and contends that "the School a more generally useful function as it stands it would if it were equipped with a severely culum, intended only for those who were e career of researchers in or teachers of

's main proposition is contained in the seems to me that we must frankly recognise rn History curriculum must be drawn up eye to the vast majority of men who seek education, than to the small minority to ical training in historiography might con- ore profitable." Incidentally, the lecture delightful reminiscences of Stubbs, Freeman, Powell, and Lord Acton; but these are luced as "cover" to enable the lecturer to g the pathway of time cautiously and to within striking distance of his "good Firth. He delivers his blow, not without But he certainly over-reaches himself when l training in research, even for would-be says that "the true historian is born and his is no more the case with the historian the doctor or the lawyer. Prof. Firth is r from this assault.

annual report, that for 1905, of the com- Moral Instruction League has been received. the league is to introduce systematic non- al instruction into all schools, and to make of character the chief aim of school-life. ows that twenty-five education authorities, with eleven last year, had at the close of o make provision for systematic moral in- heir schools. They are the following:— Leicester, Bradford, Monmouthshire, Durham n-on-Trent, Colne, Bexhill-on-Sea, Shipley, e, Derbyshire, the West Riding of York- l, Gloucester, Margate, Ebbw Vale, Sheffield, Huddersfield, Brighouse, Hanley, West Suffolk, Surrey, Cheltenham, and West Hartlepool. These authorities control more than 3,000 schools, containing about one million children. Accompanying the report is a copy of a graduated syllabus of moral instruction, including training in citizenship for elementary schools, which is evidently the result of careful thought on the part of experienced teachers. Copies of this syllabus may be obtained from the Secretary of the League, Mr. Harrold Johnson, 19, Buckingham Street, Strand, W.C.

THE Incorporated Associations of Headmistresses and Assistant-mistresses have considered the question of the manner of appointing assistant-mistresses to posts in secondary schools, and have brought before the governing bodies of such schools the great importance of granting to the headmistress freedom to select the members of her staff, and to recommend them for final appointment by the governors or education authorities. They consider it of importance, also, that an assistant-mistress should be dismissed only by the governing body at the request of the headmistress, due opportunity being given to the assistant-mistress to state her case; but that during a probationary period to be fixed by the governing body—in no case to exceed three terms—it should be possible to terminate the appointment by one month's notice on either side without reference to the governing body.

THE Rev. Dr. Gow, headmaster of Westminster, has been elected chairman of the committee of the Headmasters' Conference. The committee consists of the headmasters of Bedford, Birmingham, Christ's Hospital, Eton, Marlborough, Malvern, and Rugby.

THE Rev. Frank Stephenson, assistant master of Cheltenham College, has been appointed headmaster of Felsted School.

THE Rev. W. R. Dawson, headmaster of the King's School, Grantham, has been appointed headmaster of Brighton College.

MR. F. A. HILLIARD, headmaster of the Royal Grammar School, Worcester, has been appointed to succeed Mr. R. L. Leighton as headmaster of Bristol Grammar School.

THE Rev. W. T. Keeling, headmaster of Warwick School, has been appointed headmaster of Grantham School.

MR. JOHN A. GREEN, professor of education at the University College of North Wales, Bangor, has been appointed first professor of education at Sheffield University.

THE next open competitive examination for appointments as apprentices to the various trades in His Majesty's dockyards will be held in May. Candidates, who must be between fourteen and sixteen years of age on May 1st, should send their applications to the Civil Service Commission before April 17th. The subjects of examination are arithmetic, English (including handwriting, spelling, and composition), geography, geometry and algebra, elementary science, and drawing. Successful candidates are allowed a choice of trades according to their positions on the list; they are bound by indentures to serve for six years, during which they receive 4s. a week, increasing to 14s., and instruction at the dockyard school.

CANDIDATES who wish to sit for the next examination in August for the Indian Civil Service, Class I., clerkships in the Home Civil Service, and Eastern Cadetships, must

send their applications to the Secretary of the Civil Service Commission before July 1st. The limits of age are twenty-two to twenty-four on August 1st. Of the sixty-four successful competitors last August, all but one had had the benefit of a public school and university education. The choice of subjects for these examinations is extensive. The salaries are good; for instance, in the Straits Settlements, thirty-seven posts carry salaries of from £420 to £1,000 a year, three of £1,200, one of £1,500, and one of £1,700.

THE next examination for junior clerkships in the Ecclesiastical Commission will commence on May 8th. Candidates must be between eighteen and twenty-two years of age, and must send in their application forms not later than April 20th. The subjects are arithmetic, algebra, précis, English composition, English history, geography, Latin, and either French or German. The salary of a junior clerk is from £70 to £350 a year; there is a possibility of promotion, on the ground of merit, to the upper class of the establishment after eight years' service. In the establishment there are about thirty junior clerks, fifteen officers with salaries of £350 to £600, and ten officers with salaries above £700 a year.

SCOTTISH.

THE Draft Minute on the training of teachers continues to occupy public attention. The Press generally has received it with the greatest favour, though many consider it is too big a scheme to carry through by means of a minute. School boards, with the notable exception of Glasgow and Govan, have declared as emphatically against it. As their objections are founded mainly on financial grounds, their opposition should be to a large extent discounted. No public body has, so far, had the courage to attack the new minute on educational grounds. The pupil-teacher system—among many merits—had several patent disadvantages which were becoming accentuated every year. Under it the intellectual life of the individual did not get a proper chance of healthy development, and it was apt to send him forth to his life-work with narrowed interests and case-hardened mind.

THE teaching profession have heartily welcomed the two main principles of the minute:—(i.) that *all* teachers must attain a satisfactory standard of general education; (ii.) that *all* teachers must undergo a carefully supervised course of professional training. The feature in the minute to which most objection is taken is the probation stage, from twelve to fifteen years of age. It is rightly held that it is absurd to label children at this early age as future teachers. Neither parents nor teachers can have any reasoned opinion on the employment for which children of this age are fitted, nor can pupils themselves have anything but the most fanciful conception of the work they would like or are capable of. The London Education Committee was recently faced by the same problem. Its sub-committee recommended a bursary scheme for the catching of young teachers at eleven or twelve years of age, but the common sense of the general body emphatically declared for a liberal bursary scheme which would attract the best pupils to higher education, no matter what profession or employment they had ultimately in view. The Scotch Education Department would do well to pay heed to this experience, strengthened as it is by the strong attitude taken up by Prof. Sadler against premature selection of pupils for particular employments. What is required is an educational highway to secondary education for all able and willing to go thereon. From this supply, teaching, like other occupations, will get a sufficiency of candidates if it offers the right attractions.

THE fifth annual report of the Carnegie T
Universities of Scotland has just been issued, :
interesting information regarding the work c
in the endowment of post-graduate research an
tion of grants to the universities. The total
for the year under the former head was £4,:
estimated grant for the current year is £6,776
be no doubt that this is one of the most in
valuable departments of the Trust's operation
satisfactory to find that the sum allotted to
steadily increasing. Grants amounting to £
been claimed and handed over during the year
four universities, making a total grant of £97
bodies since the creation of the Trust three ye
addition, grants amounting to £5,224 have be
to extra-mural schools and technical colleges.
hoped the needs of these bodies will be kept
in view, as they are doing notable work in
education. The West of Scotland Technical (
has more than 5,000 students, most of them
industrial occupations during the day, and qua
selves to be captains and foremen of industry
study.

IN regard to the second part of the Trust
—the payment of class-fees—the report is b
satisfactory. The total expended during the
head amounts to £47,853, as against £45,9(
Since 1902 there has been a constant increase
due partly to the increase in the number of
and partly to the greater average number of cla
by each of them. A further reason, howe
increase emerges this year for the first tin
raising of the class-fees in three of the universi
ciaries and universities between them seem d
kill the goose that lays the golden eggs. Th
available for this particular branch is £49,
fourth university—as it is almost certain to do
lead of its compeers, the committee will find t
the position of not being able to meet their lia
this head. The committee therefore feel that
continue paying fees under the existing cor
intimate that, in conjunction with the univ
are seeking a readjustment of the regulations
this portion of the Trust funds is distributed.
factory to find that six beneficiaries have re
fees paid for them in former years by the Tru

IN consequence of the increased grants to
close on half a million sterling for educatio
£160,000 annually will come to Scotland. T
with the unappropriated balance of the su
leaves a sum of well over a quarter of a millic
cated for educational purposes in Scotland. It
too much to hope, in view of the statemen
members of the Government on the inadec
present Superannuation Act, that some part of
will be set apart for the purpose of supplement
Sir Henry Craik has already declared for thi
the increased grants just announced sh
strengthen his position. Failing some improv
direction, it is not too much to affirm that tl
lations for the training of teachers will fail
sufficient number of male candidates—and, let
will deservedly fail.

AN extraordinary case of arbitrary dismis
occurred in Gartmore, Stirlingshire. The
Menzies, ventured in the interests of the scho

certain members of the Board on the qualifi-
an applicant for a vacancy in his school. The
ated his action, and threatened to dismiss him
received an apology from the teacher for his
. A full and ample apology was sent, but the
issed him because the apology was sent to the
a Board and not to each individual. Needless
is not accepted as the real reason. The teacher
have incurred the resentment of certain in-
his strong advocacy of the use of unfermented
Sacrament, and of certain others by allowing
r to play the organ in the parish church while
elder in the U.F. Church. *Hinc illae lachrymae.*
as roused very great indignation over almost the
try. One of the most satisfactory features in it
g support given to the teacher by the newspapers
ntry. The cry for the abolition of the small
d has gone up to Heaven with increased bitter-
even the most lukewarm supporters of extended
been stirred up to see the necessity for them.

y graduates of the Scottish universities are
al action to vindicate their right to vote in
ary elections. They contend that they are on
ity registers on precisely the same footing as
hat nothing in the constitution of the universities
them any disabilities on account of their sex.
ee has been formed to raise an action in the
ession, and an appeal is being made for funds.
n in the case will be awaited with great interest,
difficult to see how, unless the part be greater
whole, women can vote in a university parlia-
ction and not in any other.

IRISH.

rmediate Programme for 1907 was shown to the
Committee of Heads of Schools by the Assistant
ers in February. This is, of course, a guarantee
g anomalies in, and serious objections to, any
course can be pointed out before publication;
g as the present cramping system continues, by
y school taking a certain subject must read the
book or course prescribed and no other, it is, to
extent, satisfactory. But the chief criticism of
system is aimed, not at the programme, but
s, and on these the committee are not consulted,
y offer any suggestions they are met with a
which the following is an instance.

mittee represents both Protestant and Roman
chools for boys and for girls. When it is
it has behind it the whole body of expert
pinion in Ireland. It should carry great force.
ntermediate Commissioners this seems to count
g. The committee took advantage of its
Dublin to draw up two memorials. The
with "the very grave situation created by
reduction of the scale on which school grants
ated in 1905." We take some excerpts from it.
seem to be the obvious duty of the Government
uch financial provision for Intermediate educa-
uld render the natural growth and improvement
em possible, whereas the experience of 1905 will
schools to reduce expenditure once more, thus
to a considerable extent this efficiency. We
suggest that it would be extremely desirable
oard should very strongly urge this view on the
t, and secure that, from some source, such additional funds should be provided as would get rid of the anomaly of penalising the schools in proportion to the growth of secondary education in this country." "Pending the solution of the whole question of the financial position of the Board . . . we beg most earnestly to ask the Board to supplement the diminished grants paid last December, so that the liabilities actually incurred in anticipation of the usual school grant may be met. This, we venture to suggest, could be done out of the reserves of accumulated income, which, we understand, amount to more than £100,000." The Board's reply to this is, "that in view of the possibility of a diminution in their income for the present year, even greater than that which occurred in 1905, the commissioners have decided not to encroach upon their reserve fund for the purpose of increasing the amount of the school grant for 1905." Two pertinent questions may be asked: Have the commissioners represented the gravity of the case to the Government? Will they in 1906, as in 1905, give away £5,000 of their income, which should go in school grants, as advances to managers or as bonuses to choirs and orchestras?

The other memorial dealt with some of the rules, especially Rule 43, which "will operate with hardship and injustice in a very large number of cases." For instance, a student entering for the classical course will only be allowed to take the extra papers in classics, and not, say, in French, being thereby debarred from competing for the French medal or a French composition prize. "Had Rule 43 been in operation in 1905, no fewer than 52 boys who won special distinctions, viz., 13 medals, 30 composition prizes, and 9 special prizes, would have been prevented from competing for them." The memorial asked the Board to allow "a student to take the extra honour paper in any subject, such extra honour paper to count for medal, composition prize, or special prize only." This has been met by the Board with a direct negative.

The number of students who have given notice of their intention to present themselves at the Intermediate examinations in the present year is the largest on record, viz.:—boys, 8,283; girls, 3,384; total, 11,667. This is an increase on last year of 1,379, being 840 boys and 539 girls. Last year showed an increase of 1,122 over 1904. However generally satisfactory these figures appear, they cannot but be viewed with mixed feelings by teachers, who see their successful efforts to improve education rewarded by diminished incomes.

In these circumstances, it behoves Intermediate teachers to urge upon the Government to introduce a reformed system on the lines of the Dale-Stephens report, and with expanding grants. It is an open secret that reforms are contemplated, and there is an excellent opportunity for creating a genuine teaching profession. One of the signs of the times is the promised inquiry into the working of the department of which Sir Horace Plunket remains for the present vice-president. The secondary education grants administered by it should be transferred to the proper secondary educational authority.

The Association of Women Graduates is approaching the authorities of the Royal University with a view to secure the representation of women on the Senate and Convocation. It is also collecting information on the question of insurance and the rates offered to teachers by different insurance companies. Its literary and debating society has had papers on "An Ideal Scheme of Irish Education," by Miss Maud Joynt, and on "The Celtic Element in English Literature," by Miss Hayden.

N

WELSH.

THE question of fees in the intermediate schools is attracting attention in Carnarvonshire. The Staff Committee sent in a report to the County Education Committee adhering to the present fees paid in the Bangor County School for Girls. Some critics maintain that a fee of £8 or £9 a year for secondary education places a secondary school beyond the reach of poor children, "for whom the schools are mainly intended." Surely the right way of putting the matter is to say that secondary schools are intended for those children who have the exceptional ability to profit by such education, whether their parents are well off or poor. It is perhaps old-fashioned to say that those parents who can afford should pay, and those who cannot should be helped. One thing is clear, that a secondary education worthy of the name cannot be given for less than £10 to £15 per pupil annually. If the school-fees are £4 or £5 a year, the balance has to be met somehow. There is the same problem in the university colleges of Wales. The education of each student costs probably from £25 to £30 per student; the fees are £10 a year. Good education cannot be cheap. The question is: Who is to pay for it? Those who benefit from it, or the local ratepayers, or the Treasury?

MERIONETHSHIRE, in this matter, has taken its courage into its hands, and applied to the Local Government Board, under the Education Act of 1902, for consent to the raising of an amount which would be produced by a rate exceeding 2d. in the pound for the purpose of supplying or aiding the supply of education other than elementary, and of promoting the general co-ordination of all forms of education within the county. It was stated that there are seven secondary schools in the county and five school districts, and six of the schools were established under the Welsh intermediate education scheme. The gross revenue is £2,267; and, after deductions for examinations and inspections, £1,900 is divisible among the schools. These funds are inadequate, and the halfpenny rate had been supplemented by increased rate-aid under the Technical Instruction Act, which increased from a farthing in the pound in 1894 to 2d. in 1904-5. The result of the inquiry will be interesting, for what Merionethshire does, other counties will have to consider also.

LORD STANLEY OF ALDERLEY has been speaking on a similar topic in Anglesey. He pointed out that probably the voluntary schools of the county would now come to be transferred to the public authority. The authority had required certain repairs to be carried out before they would take over such voluntary schools, and the managers had failed to raise the necessary funds. If, then, these schools became part of the public provision of schools, it would be "very unreasonable and inconvenient" if the county should fail at its own expense to carry out the repairs which they had demanded as absolutely necessary when the cost would have fallen on private managers. There would be financial burdens in putting schools in repair. And more—they would have to secure *the best type of teacher.*

WITH regard to Anglesey, some remarks of Prof. J. Morris Jones deserve a note. In moving a resolution that in the opinion of the committee a larger share of the cost of elementary education should come out of the Imperial Exchequer, he said that it must be admitted that the staffing of Anglesey schools was very unsatisfactory. For the whole of the country, certificated teachers formed 46·5 per cent. of the teaching staffs, while in Anglesey they were only 30·9 per cent. Teachers who were not were not properly qualified, and Wales did not in this respect.

OPINION seems to be consolidating in favour of Council of Education for Wales. Mr. Lloyd-G an eloquent and impressive appeal at Cardiff i calling a conference on the subject, and especi for that frame of mind in which, by judicious c unanimity may be shown. He showed that earnest by agreeing that Conservative candidates election should be invited as well as Liberal was agreed by the conveners, the Lord Mayor and Mr. Lloyd-George, that the Bishops shou invited. Miss E. P. Hughes has strongly women should have their representatives. But Lloyd-George nor the Lord Mayor mentioned th ing to the conference of any teachers. There is serious danger that a National Educational Cou recommended without providing for the presen experienced educationists.

RECENT SCHOOL BOOKS A APPARATUS.

Modern Languages.

The Teaching of Modern Languages. By Brereton. 111 pp. (Blackie.) 1s.—We can this booklet as a concise statement of the manifo presented to the teacher of modern langu Brereton is a moderate reformer; his experien and varied, and his remarks are worthy of c sideration.

Graduated French Unseens. By Victor Oge to IV. 64 pp. each. (Arnold.) 8d. each.—Th have been skilfully selected from a large authors; they are interesting, and fortunately nc Sometimes a footnote would have been welco average teacher quite as much as to the pup pity that the proof was not read with more c first twenty pages of Part I. we meet with *py dentent* (for *acci . . .*), *êtes*, *ou* (for *où*), *.o deça* for *deçà*, *subitment*, as well as errors of pu

L'Anniversaire de Blanche. By Clémenc viii.+72 pp. (Blackie.) 1s.—A series of prett child-life, justly commended by Mr. Petilleau face. The illustrations, by Mr. R. Hope, are An appendix on the conjugation of the verb is a vocabulary, which is not quite complete. T is clear and careful; the only mistake we ha *revoirs* on p. 50.

Grimm, Die zwei Brüder. Edited by A. Monerieff. 40 pp. (Blackie.) 6d.—This fairy edited, we believe, for the first time, is suitabl in the second year of instruction. The text is fully printed, and the notes are good.

Zschokke, Der zerbrochene Krug. Edited Brigstocke. 36 pp. (Blackie.) 6d.—Zschokke' idyll in explanation of a picture is well suited reading in or out of class. The present editi venient and neat. Mr. Brigstocke's notes are only slips we have noticed are *Heine* for *Heyn* l. 3, and *streiteten* for *stritten* on p. 36, l. 23.

Classics.

Latin Texts. General editor, A. Evan Bernays. *Vergil: Select Eclogues.* Edited by J. C. 64 pp. *Selections from the Georgics.* Same 4 pp. *Cicero: Pro Archia.* Edited by Margaret 4 pp. *Caesar in Britain.* Edited by J. F. Dob- pp.—The editor of this series appears to halt wo opinions, or perhaps many. He feels the eaction against notes—so there are no notes. is a vocabulary, which, like notes, is a useful misused in school-books. Then again, there introductions, not only upon general questions the author, but on the particular book or which follows. The *Georgic* selections contain, ergil's life (a short paragraph), an account of d of Vergil's debt to Hesiod, a criticism of his epithets," historical references explained, and vo pages on the hexameter! There are eight pages rint to introduce twenty pages of text and thirty- of vocabulary. Similarly with the *Eclogues,* to added also four pages of notes on the plants and entioned. Most of this is the same substance as ded notes, only less easy to find. *Caesar in Britain* reasonable; but *Cicero pro Archia* deals with Rome, the Italian franchise, and three pages on r of Archias—too learned, and most of it un- Further, each text has chapter or section head- g a summary of the matter—a thing which the ld make for himself; it is part of the training. *icero,* the chief clauses are distinguished by a pe. Again, the texts are not complete. Another nfusion is the marking of long vowels. "Vowels nature are so marked, except where long by says one book. What is a vowel "long by The vowel may be "in position," and the y be long by the fact of the consonants "making but the quantity of the vowel is not changed: if rally long it remains long; if short, it remains e statement made in the Vergil books, that "all urally long are marked" in the vocabulary and portion of the books, is inaccurate. Thus, in . 34 we find *ardens,* which should be *ārdēns,* ds being naturally long as well as in position; rly all "concealed quantities" are unmarked in This may have been done for some reason, but othing to show that the editors know that there things as vowels long by nature and also in And why is the marking only used for a small me of the books? Is it to be inferred that the to learn how to read Latin correctly in one-third ? If so, why is the marking carried through in ? Is the *Cicero* the first term's work, and the sary for learning to read Latin correctly exactly nd one-third? We are informed that the series for "lower forms," and that each book is to e term's work. At what stage in the learning of his to be one term's work? Has the editor clear conception of the help which should be e various stages of the study? when vocabularies d with benefit, or when the dictionary should be ? or how many stages there should be in learn- The series is undoubtedly well meant, but it is ; and, if we do not take care, as much harm ne by crude and undigested attempts at reform, system which is beginning to pass away.

from Greek History. Re-told from Herodotus Havell. xviii.+238 pp. (Harrap.) 1*s.* 6*d.*—The charm of the old Greek stories never palls, and Herodotus is an inimitable storyteller. Mr. Havell's book is therefore welcome in its attempt to re-tell a few of Herodotus's historical tales. Some of them are familiar to most children who read, but this book has the advantage of increasing the number of those available for English children. It contains the stories of Crœsus, of Cyrus, and of Rhampsinitus, with Cambyses and Polycrates, several anecdotes of Darius, Cypselus, and Periander, and a selection of stories on the history of Sparta and of Athens, including the Persian invasion. The book will be a good companion to the drier history-books, or an introduction to history for beginners. The style is simple and unpretending. There are sixteen illustrations, including several pictures by Victor Prout, photographs of landscapes, and portraits. The portraits are not fully authenticated, however, and this ought to be said. The Greek cavalryman (p. 124) is not of the same date as Herodotus; and, as usual in such books, a little more knowledge would have made possible a better selection of pictures.

The Tutorial History of Rome. By A. H. Allcroft and W. F. Masson. Third edition, revised and in part rewritten by J. F. Stout. viii.+438 pp. (Clive.) 3*s.* 6*d.*—There is no need to discuss this book at length. It has stood the test of use, and is now in its third edition. It is a clear, concise, and businesslike work, and the constitutional history is exceptionally well done.

English.

The Magic Hook and other Plays. By Marion L. Thomson. 100 pp. (Horace Marshall.) 1*s.*—Books of playlets for school use are not too numerous or too good in quality where they do exist, probably because few of those who would write such things give sufficient thought to what they would achieve, and also because the dramatic element of such plays cannot be spoken of in the same breath as that which must pervade a play written for the theatre. Nevertheless, Miss Marion Thomson has managed to produce the little book which lies before us, containing three small plays which we unreservedly recommend. The first of these gives its name to the book; the others are "Gretchen of the Mill" and "Merriment's Friend." The great merit of all three consists in the simple, natural, and, for the most part, unaffected dialogue; and it is in this latter respect that we feel inclined to rate Miss Thomson's work highest; because when grown-up people try to write books and plays for children, they almost always adopt a patronising pose and write stilted stuff, which in the mouth of an ordinary unsophisticated child ought to be regarded with horror, and is, indeed, a first-class way of making children into little prigs. She has also avoided that other pitfall, blank verse; all the plays are in simple prose. Some songs and other verse are included of passably good quality. The illustrations will help to an appreciation of the appropriate dress and pose for the characters, and some sensible acting directions are found at the end. This book ought to be widely used.

The Primary Grammar. By R. R. Smithard. 1–84 pp. (Philip.) 1*s.*—For all who wish to teach formal grammar this book and its arrangement are excellent. The work is placed on one side of the open page, the questions on the other. It is a pity that grammarians will continue, to the befogging of children, to tell us that the subject is "that of which we speak." How is a young child to apply a rule like this in analysing "She sells oranges"? Far better is it with the ancient Greeks to start with the predicate. The treatment of weak verbs and of strong verbs

that end in a dental is inadequate; no child can tell that "feed" is weak and "slide" is strong. Both these difficulties are shirked except by such masters as Dr. Sweet. The habitat of the writer (Cairo) is not obtrusively brought forward, and for English schools the book may be confidently recommended.

(1) *The Retreat of Sir John Moore.* 111 pp. 6d. net. (2) *The Taking of the Galleon.* 132 pp. 6d. net. (3) *Trips to Wonderland.* 117 pp. 6d. net. By Dr. W. H. D. Rouse. (Blackie.)—These are further instalments of Dr. Rouse's really unique series of educational texts, and since Lucian, Lord Anson, and an obscure author like Robert Blakeney are here drawn upon, these texts fully justify their description as marking the highways and byways of literature. They are extremely interesting, and will repay use in class in several important particulars.

As You Like It. By L. R. Boyd. 102 pp. (Chambers.) 1s. 6d.—This is part of a new series of Shakespeare texts, to be known as the "Academy" Shakespeare. It is well done; and even in these days of multitudinous school editions it will be found to possess all the necessary features of such publications in a practical and adaptable form. The introductory matter deserves special praise.

Dickens's A Tale of Two Cities. By A. A. Barter. xxviii.+368 pp. (Black.) 2s. 6d.—The idea of continuing this familiar series of reading-books by adding some of Dickens's novels to those of Scott's already published is a good one. The introduction and notes in the present case are all that could be desired, and this story ought to be acceptable in its present form, as it is undoubtedly useful.

Scott's Old Mortality. xxvii.+704 pp. (Macmillan.) 2s. 6d.—This edition makes a famous reading-book. The introduction has been entrusted to competent hands, and, as we have remarked before of volumes in this series, it is surprising that so much creditable work should be anonymous; the editor's notes are both numerous and good, and the inclusion of Mr. Andrew Lang's adds an additional interest to a very praiseworthy volume.

Studies in Browning. By Susan Cunington. 158 pp. (Sonnenschein.) 1s. 6d. net.—This little book contains four of Browning's poems, to each of which an "outline study" is appended, and afterwards some few and brief notes. The idea is by these means to supply the elucidation necessary for the due enjoyment and appreciation of Browning's poetry. Miss Cunington's aim has not been to convert the Philistine Briton from apathy to enthusiasm for the most difficult of his poets, but to aid "the literary study of literature." Possibly she may do something in this direction, and this little volume will so serve its turn.

Selections from Addison. By B. Wendell and C. H. Greenhough. lxi.+340 pp. (Ginn.) 3s. 6d.—We are glad to express the highest praise concerning the editors of these selections from Addison, for the introduction to this book. It is splendid as a piece of critical literature, and the full bibliography which follows is a monument of painstaking research. The notes are a bulky portion of the volume, yet they are never too long, and they represent by apt quotation an enormous range of reading.

Scott's Talisman. xx.+404 pp. (Frowde.) 2s.—Another "Oxford" volume; well printed, edited anonymously and well, and supplied with some excellent illustrations which will make it extremely acceptable in class-work if it should be used as a reading-book. of the best cheap editions in the market.

How to Read English Literature. By Laur 1–206 pp. (Routledge.) 2s. 6d.—This is one c books which are being produced as a result of of Education's activity in the matter of Englis It is full of interest, the chapters on Chaucer speare being extremely good; but if it is suppos such book as this will lead a class to study En ture, we think the class-leader will be disapp these books are intended for people who literature.

History

The History of England from the Earliest T Norman Conquest. By T. Hodgkin. xxi.+528 mans.) 7s. 6d. net.—Even the most enthusias of our national history must confess that much Norman story is tedious reading. There ar names, and so many of the same name, so m obscure, and therefore so many events that are disconnected, that we willingly reach the Norma or at best go as far back as Egbert for more t outline. And therefore it is that we are glad period should be treated by Dr. Hodgkin, the Italy and her invaders, whom we know as a n the Latin and other literature of the early n Even he cannot make much of this period " in the ordinary sense of that word. He speaks himself of "the many Sigeberts who about perplex the student of Anglo-Saxon pedigrees but he states the whole of what is known in tive which will serve as a reference-book for wildered by varying text-books. We would be understood to mean that this (the first v "Political History of England in Twelve Volu reading. On the contrary, there is much tha interesting, and the present solution of m points is here given with clearness. As exam which vary from our ordinary guides, we may attribution of Stonehenge to prehistoric tim chapter on Britain between Cæsar and Aug Numismatists have revealed to us in that indeed Lear, but they tell us of Cunobelin—S Cymbeline—whose relations with Rome were those depicted for us by our great dramatist. also be learnt from the chapters on Roman Brit as they are in the light of the most recent k the Roman provinces as a whole, and monumen in this country in particular. Even the careers known men of that period may be here read profit; and Dr. Hodgkin turns willingly from details of conquest and of internecine strife to the conversion, the organisation of the Engl the works of "Alfred at Peace," and the state Dunstan. With the reign of Ethelred the Re the later stages of the nation's decay from the and of Alfred. The selfish and even treacherou its nobles accounted for a large part of the " capacity of which the whole course of its hi the last century before the [Norman] Conquest evidence" (p. 401). Dr. Hodgkin goes on t tendency to swinish self-indulgence, and the flesh in some of their most degrading forms, the national character. There was still in it metal, but if the Anglo-Saxon was to do any doing in the world, it was necessary that i

gh the fire and hammered on the anvil." s in the other volumes of this work, a full thorities, a sufficient index, and two maps.

fe of King Alfred. By A. S. Cook. xii.+ n.) 2s. 6d.—The scholars having now given edition of Asser, the results of their work are school purposes, and Prof. Cook (of Yale ere gives us a translation based on Stevenson's are an instructive introduction, a large number wn mainly from Stevenson, and two appen- ne of Alfred's prefaces, and a letter to him Archbishop of Rheims. There is also an index rof. Cook omits—we think unwisely—the later , and we are therefore only told of such e cake-burning; but we welcome this cheap text, and hope it may prove as useful to our e editor evidently hopes it may be in the of "honest and capable government in the friends of which cause he dedicates it.

Geography.

Nature Series of Relief Models: Isle of Wight. y 11in. (Philip.) Framed, 15s.—(2) *Philips' Slate Surface Globes.* 12in. Series. (Philip.) £1 2s. 6d. net.—With the resources that are le in the form of maps, relief models, and od atlases, there is no excuse for poor equip- truction in geography. Messrs. Philip have hers with as good material of this kind as red; and the series of relief models which they mmenced to publish will increase their reputa-

RELIEF MODEL OF THE ISLE OF WIGHT.

-class work. The four models now ready re- characteristics of the Isle of Wight, Lake ern part), Snowdon district and Menai Strait, olk Broads. One of these models—that of the t—is before us, and it is an elegant and in- e of work. The limits and general character will be seen from the accompanying photo- towns, villages, roads, rivers, and other clearly shown, so that a child looking at the n accurate bird's-eye view and sees at once ctions of roads and rivers are determined by es. The steep cliffs on the south coast of the he central ridge of chalk running from Culver east to the Needles on the west, are faithfully There are no names or scale upon the models, Ordnance Survey maps of the districts shown be supplied in frames, to match the models, at five shillings each. Provided with a model and the corresponding map, any teacher who cares about geography should be able to give inspiring lessons on map-reading, and to show that land relief exerts an important influence on natural and other features. (2) It has been urged by Mr. H. J. Mackinder and other authorities on geographical education that a globe provided with a black slated surface upon which maps can be drawn should be used as soon as pupils have elementary ideas of direction. There is really no better way of conveying an accurate idea of the shapes and positions of the continents, provided the teacher can use chalks or pencils properly. The 12in. globes now available can be had without any markings, with lines of latitude and longitude, and also having these lines together with the outlines of countries or with land areas coloured white.

Mathematics.

The Elements of Solid Geometry. By Charles Davison. viii.+122 pp. (Cambridge University Press.) 2s. 6d. net.—We are glad to find that solid geometry is gradually having more attention given to it, and welcome this well-arranged book. The course laid down includes chapters on the polyhedron, the cylinder and cone, and the sphere; the selection of propositions seems to be good, and the general treatment thoroughly adapted for the average schoolboy who has made satisfactory progress in plane geometry.

Elementary Trigonometry. By H. S. Hall and S. R. Knight. Fourth edition, revised and enlarged. xv.+415 pp. (Macmillan.) 4s. 6d.—In this edition the enlargement seems to bear chiefly on the more elementary parts of the course; the book now contains practical exercises in constructing angles with given ratios and in finding the trigonometrical ratios of given angles, while work involving the use of four-figure tables is amply provided for. A set of four-figure tables is appended. In its new form the book is sure to retain its place as a good elementary work.

A New Trigonometry for Beginners. By R. F. D'Arcy. viii.+84 pp. (Methuen.) 2s. 6d.—A very simple and sensible treatment of the elements of the subject; much use is made of drawing figures to scale, and four-figure tables are employed for the calculations. The number of examples for practice in the solution of triangles and in the applications to the work usually classified as "heights and distances" might with advantage be considerably increased.

Geometrical Conics. By F. S. Macaulay. Second edition. x.+300 pp. (Cambridge University Press.)—In this edition the sixth chapter has been modified, and a new chapter, which may be regarded as a continuation of the sixth, has been added. When studied on the lines laid down in this book, geometrical conics is a much more valuable discipline than it has too often been.

Weights and Measures. (Jaques.)—English weights and measures are certainly not easily committed to memory, and, while we think the simplest method of dealing with them is to abolish them altogether, we must so long as they are in use welcome any means of making it easier for children to master them. There has been sent to us a pack of cards, beautifully printed in colours, that make it possible to combine the amusement derived from a round game with the acquisition of familiarity with the tables of weights and measures. Whether children will like the game can only be tested by trial; if half a dozen children played the game for a few evenings, the probability is that they would get a better knowledge of the tables than most of them now possess. The cards cost 1s. per pack.

Arithmetical Wrinkles. By J. Logan. 84 pp. (Sonnenschein.) 1*s.*—The book is stated to contain "Notes on the Various Rules; Solutions of Knotty Problems; Hints on Methods of Working; Mensuration Rules, Tables, &c." For ourselves, we have never derived much benefit from books of this type, and we generally prefer to recommend pupils to study any good text-book. For those, however, who are of a different opinion, this book will provide a good deal of useful information.

Continuous Mental Arithmetic. By G. F. Smith. 128 pp. (Nelson.) 2*s.*—The book provides a graded course for all the classes of the elementary school. The exercises seem to be well arranged and give ample practice.

The Elements of Geometry in Theory and Practice. By A. E. Pierpoint. viii.+156 pp. (Longmans.) 2*s.*—This work is drawn up on lines that are now common. An introductory section of a practical character is followed by a theoretical section based on the Cambridge syllabus, though going in some ways beyond it; the third section deals with problems. The range is not very wide, being, so far as the theoretical work is concerned, about that of Euclid I. 1–34; the treatment, though not showing many special features, seems adapted to meet the needs of beginners. The exercises are very numerous, and usually simple.

Science and Technology.

The Elements of Geology. By Prof. William H. Norton. x.+461 pp. (Ginn.) 6*s.* 6*d.*—This is a text-book for beginners which, as is customary, deals with physical geology first, and afterwards gives a descriptive historical outline of the story of the earth. We are glad to notice that the young student is urged, in addition to reading this book, to observe as much as possible in the field, and to apply laboratory methods to the examination and determination of specimens. Being intended primarily for students in the United States, special attention is given to the geology of North America. For this very reason the volume should prove useful as a work of reference in geological classes here, providing students with striking examples of geological features in addition to those of their own country. The work is beautifully and profusely illustrated, and though the examples depicted are mostly American, some of the illustrations are of scenes in this country which have already been utilised in certain of our text-books. The book is accurate, interesting, and well arranged. It may be recommended with confidence.

The Founders of Geology. By Sir Archibald Geikie. Second edition. xi.+486 pp. (Macmillan.) 10*s.* net.—The present work differs from the first edition, which has been out of print some time, in that it includes not only a more detailed discussion of the history of geological science during the seventy years from the middle of the eighteenth to the close of the second decade of the nineteenth century, but also a sketch of the earlier progress of geological ideas from the times of ancient Greece downwards. As a stimulating account of the pioneers who built up the science of modern geology, the book might well find a place in the libraries of schools where science is taught.

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Miscellaneous.

The Bending of a Twig. By Desmond 314 pp. (Chapman and Hall.) 6*s.*—Ev doubt, has read "Eric," "Tom Brown's S and certain other books of the same kind, modern schoolboy must add "The Hill" Winifred's," not to mention "Stalky and mamma will let him. Mr. Desmond has story of a modern schoolboy brought up at ho parents, and sent to school at the age of thir more knowledge of the world than is to be these books. Poor Marsh (the boy's name) i capped by the Christian name of Lycidas, boy of only average intelligence. He goes to full of all sorts of illusions, not certain whe be Eric, or Russell, or Tom Brown, or tha Stalky, but quite certain that, whatever happ distinguish himself and become a hero. Hi may be imagined. The poor boy makes a fo from the first, and he never quite shakes him the ludicrous mistakes of his first year. But his foolish outside, there is a simple, affec and genuine grit. So, although "he is games," nor brilliant intellectually, he works until he becomes head of the house. The g of school stories is that so little happens, nothing to give unity to the plot; but our a ingenious device of making his hero behave li provided a series of events which make a story, and, by showing how the boy's cha how he rises superior to mistakes and hum given unity to the whole. It is a very ente but thoroughly wholesome all through, with ness, sentimentality, or cant. Older readers amused by his criticism of the other sc which we have mentioned. The scene of the

, and the book is illustrated by a number of that school. We must take for granted lang and local colour, as we had not the of being educated at Shrewsbury. But we that in comparison with the descriptions of boys live, and talk naturally. One cannot by the paramount importance of "games" l life. No one seems to make any attempt oung barbarians with intellectual influences. has scored a success with his book.

Efficiency. By Dr. A. Shadwell. Vol. I., Vol. II., x.+488 pp. (Longmans.) Two net.—The comparative study of industrial l, Germany, and America, contained in these is of wide interest and prime importance. tain much information of value to students and education. The first volume, for in- oted almost entirely to the consideration of ustrial districts in England, Germany, and the influences of natural conditions upon their opment. The characteristics of the people in istricts, nature of the industries, and causes ontributed to progress, are described clearly power that comes from personal knowledge. which appeal particularly to us in the second hose on elementary and technical education. neous ideas exist as to the relative positions countries in this respect that the fair com- facts is very welcome. The teaching staff nt in American schools. In 1901 there were n teachers and 123,941 men, and the pre- women is increasing rapidly. The average s paid in all the States in the same year achers, £114; female, £96. In Germany, teaching staff is one of the strongest points, er has an official position and professional found in England or the States. As to the of the three peoples, Dr. Shadwell says:— method of advance is by careful, well-con- the American by brilliant leaps—it is much sometimes lands in the wrong place. The between. They are less—very much less— an the Germans, less alert and enterprising nericans." The books will be read with profit by many students of material progress; ike of accuracy it is to be hoped that writers o compare conditions and achievements in many, and America will consult this work so.

CORRESPONDENCE.

do not hold themselves responsible for the xpressed in letters which appear in these As a rule, a letter criticising any article or ted in The School World *will be submitted ributor before publication, so that the criticism nay appear together.*

Military Training in Schools.

who so widely advocate military training in considered the matter in its purely educational e as teachers cannot take our instructions lar sect of military experts, or from a certain ticians. We have to ask whether this train- iate to the nature of the boy and will conduce , physically, intellectually, and morally; and ut whether it is the best possible way of thus compassing his physical welfare and the rest. Unless it will stand this test, it has no business to find a place with us.

At this time of much educational construction, and many hopes, I would urge that this test be applied rigorously:— (1) Are the methods and aims of military training such as to provide that well-adapted and scientifically ordered physical education which the boy needs? (2) Will they help to bring into our schools that intellectual keenness and independence that we desire? (3) Will they contribute to that moral outlook which is part of the great ethical end of education?

It is on this last point that I would dwell for a moment. What are the characteristics of the raw material we have to mould? One is a strong combative instinct; this needs, not goading, but guiding, that it may grow to serve better purposes than the natural man seeks after. Our youth are ready enough to exalt force as the most glorious factor in life, to think of it as the sovereign remedy for the world's ills. This view has to be tempered and elevated, not ingrained.

Lord Roberts desires to stimulate patriotism; a grand end—but are we to be content with a mere animal or tribal instinct, or a conception based upon nothing better than the fine fighting qualities of the British race? Is this the wide sympathy and enlightenment that education is to bring? In our history teaching, a good and true development has been to give our military annals less exclusive prominence, and to bring out truer elements of greatness, heroism, and national progress. Some reaction to this has flooded the market with many patriotic reading-books which aim in the crudest fashion at arousing a patriotism of the most barbaric type. But let us assume that the better way is really gaining ground; what will it avail if the glamour of the military art is brought into the very lives of the boys?

It is not quixotic to maintain that our schools should be leaders in mankind's advance; they are the repositories of the hopes of the future. Ought we not to be careful that these hopes do not suffer at our hands?

Bootham School, York. F. E. Pollard.

P.S.—The above was written before the appearance of the March issue of The School World. "W. B." in his letter admits, or glories in the fact, that "every boy worth the name" is at heart a soldier. It might be said that most boys are at heart, at one stage or another, selfish or even cruel. What then? "W. B." says, "Why object to teaching it in school, then?" But the main point is that boys should go into the world with, at the very least, an unbiassed mind towards the question of war. The workers and the commercial classes are moving strongly towards international peace. Are we so to train our young men that war seems to them a permanent and unquestioned institution of the Christian world, like the other aims and virtues that are inculcated in youth?

F. E. P.

The Use and Abuse of Paraphrase.

In his interesting article on "Paraphrasing" in your February number, Mr. J. H. Fowler admits the danger that such exercises may involve a desecration of the highest forms of literary art and a lowering of the standard of style. This objection, however, may be obviated, in the case of prose at any rate, by the simple expedient of "re-translation." In June, 1904, a useful article was published in The School World in which the writer recommended the turning of pieces of crude English ("translated" by

the master from standard authors) into prose as near the original as a boy could get. A combination of this method with the paraphrasing exercises advocated by Mr. Fowler would possess the advantages of both, with the additional advantage that the work would be done entirely by the boy. The device of re-writing an author's ideas in language as much like the original as a boy can remember, although it has the sanction of R. L. Stevenson, is too much open to the objection that it is a mere "playing of the sedulous ape," but a re-writing from a "translated" paraphrase would be free from this objection, and would not only serve to show the boy the inferiority of his own composition, but would also prove an excellent training in style. Perhaps some of your readers will give us their experience of a trial of this method.

W. W. SAWTELL.

Secondary School, Battersea Polytechnic, S.W.

Parallel Straight Lines.

IT is satisfactory to find that Mr. Godfrey admits in substance that the definition of direction, which I suggested in the March number of THE SCHOOL WORLD, contains the parallel-axiom, because it was expressly framed to do so.

The definition is frankly based on experience, as Lobatchewsky proved that Euclidean parallels are based; the assumption that "pairs of lines exist making equal angles towards the same parts with every transversal" is sufficient to distinguish Euclidean from other geometries, and this Mr. Godfrey admits is contained in the definition. (Mr. Godfrey says latent, though I gave it explicitly.) The treatment from this definition is therefore rigorous.

What I have claimed is, not that the use of direction enables us to prove the parallel-axiom, but that a suitable definition of direction contains it, and that the consequent theory is rigorous.

E. BUDDEN.

Macclesfield.

WHILE it is unnecessary and often extremely inadvisable on pedagogic grounds to attempt the rigidly logical development of a scientific subject when introducing it to children, the logical relations have still to be borne in mind by the teacher from the outset, and they must act as an important determining factor in deciding the kind of treatment which is to be adopted. On these grounds most teachers of elementary geometry no doubt welcome any discussion which may help towards a settlement of the vexed question of direction and parallels, and it is for this reason that I venture the suggestions which follow.

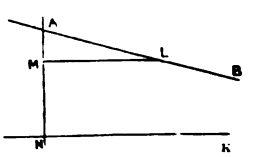
It is perhaps safe to say that teachers who do make direct appeal to the idea of direction never find it necessary —for the sake of being clearly understood—to explain what is meant by "same direction" and "different directions." Surely this is because the idea itself is intuitive, and may be found universally among the ideas of space which all children possess. Does it not follow that a science of space which attempts to ignore direction will seem artificial and in some degree out of touch with reality?

On the other hand, if we begin frankly with the assumption that this idea needs no explaining, it should be possible for the development of our science to be simple and natural. It is such an assumption that is here advocated. However, as in the case of temperature in the science of heat, and mass in mechanics, the use of the idea contributes little to progress until it is made quantitative; and for this purpose, just as we must associate lengths or efficiencies with temperatures, and define differences of temperature as measured by differences of either of these, and mass ratios similarly in terms of velocity chang have to seek some quantity with which to tion, and in terms of which we may mea of direction. The required quantity is, o It is important to note that while an angl a difference of direction, it is not to be i difference of direction, any more than a length—expansion—is identified with an temperature.

We may begin by defining a straight l portion of which is in the same directio portion. Thus a straight line is to be taken a direction. It is then axiomatic that on line can be drawn through a given point ir tion. Our idea of "same direction" bei safe, we may now move straight lines wi their directions, and hence by superposition transversal makes equal angles with parall same direction.

The difference between two directions is measured by the angle between two inter lines drawn in these directions. The rot I. 32 now holds, for the turning—changing only occurs at the corners. The proof fails triangle, since direction alters during progre

That non-parallel lines meet may be prove First, only one line can be drawn through at right-angles to a given line, and the two the usual construction and proof may be us line is obtained by joining the given point t given line.



Now let AB and NK be in different di $AN \perp$ to NK, and through L in AB draw In AB take R such that $AL : AR = A$ $NR \parallel$ to ML $\therefore NR \parallel$ to NK, *i.e.* coincides meets NK in R.

C

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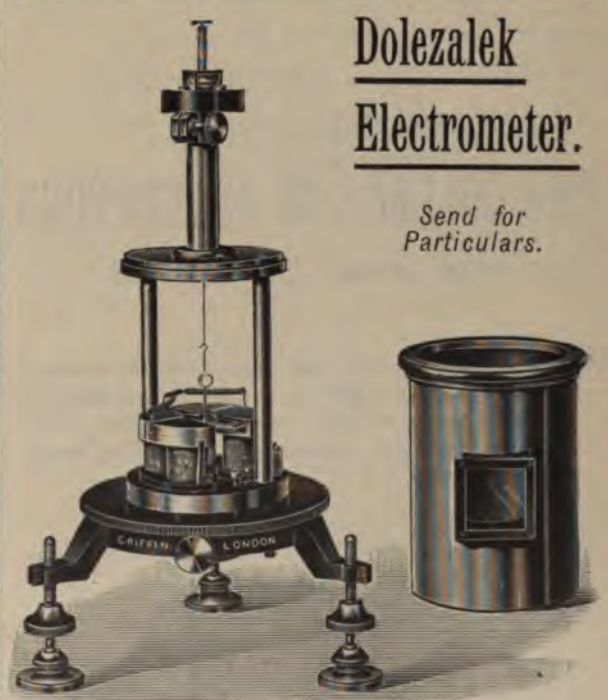

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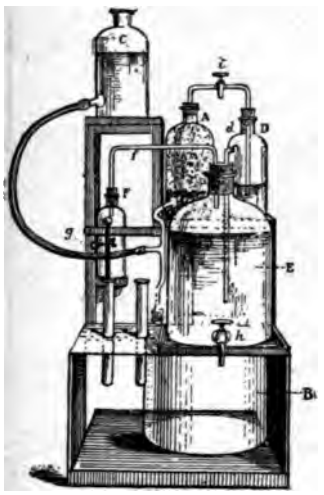

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MAY, 1906. SIXPENCE.

EDUCATION BILL, 1906.

Act of 1902 held the Bill of 1906 within
s arms." Though far from being
enerally recognised, it was nevertheless
hat Act, from its earliest appearance,
e abrogation, sooner or later, of the
system, and the public management as
blic financial support of all elementary
The Bill makes the implicit become very
leed; and the fact indicates that Eng-
ist alive to its duty in respect of popular

No nation which takes itself seriously
of its great corporate activities, such as
the administration of justice, to the care
sible persons, or groups of persons,
atriotic, self-sacrificing, or honestly
or the common good. The Bill is a
(somewhat belated, it must be said) that
on of elementary instruction, at least,
ese great national services which should
gated to private citizens.

proposes to secure for the schools an
management, the concentration of
ty, and freedom from a certain poverty
l resources never entirely eliminated
te enterprise in public affairs. These
ought to result in greater efficiency of
ion, and, in a less degree, of educa-
vement. The qualification is necessary
r case, for it is true, however slow we
admit the truth, that machinery is very
-valued in the spiritual relationship
ation. Within the past two or three
omplaint has not been infrequent, that
administration was being over-cen-
at education itself was being made too
ffair of bureaucrats, and too little the
ntelligent, sympathetic men and women
th the children in the schoolrooms. In
with the tentative policy which seems
ugh the Bill, the Government, having
of this complaint, proceeds to make
remedy which it does not venture to
By clause 26, the council of a borough
n a metropolitan borough)," or of an
ral district, or parish, may *require* the
ncil to delegate to them its powers of
t of elementary schools within their
area. The presence of local management (as distinct from a centrally-initiated policy) is so strong a bulwark against excessive uniformity and office-made routine, that the omission of the parenthesis from this clause would be a gain to the metropolis itself. Local interest is further stimulated by the provision that the council of a non-metropolitan borough or of a district council may apply to the Board of Education to be made the local education authority for higher education, if the population of the borough or district reach fifty thousand.

"This Bill means money," said Mr. Birrell in introducing the measure. It would seem that he was referring to the extra grant of one million annually from the Exchequer which the Government believe will more than recoup the local authorities for the expense involved in taking over the voluntary schools. Sir William Anson thinks the belief too sanguine. However that may be, it is a defect in the Bill that it does not ear-mark any money for education other than elementary. Greater facilities are given to educational authorities for raising funds to be spent on secondary schools; the limitation to twopence in the pound of the rate for that purpose is happily to be removed, while the period for repayment of county council loans contracted in respect of education is extended from thirty to sixty years, and governing bodies of schools may obtain loans from the Public Works Loan Commissioners. But these are permissive powers which will only be exercised by authorities who clearly recognise the necessity for expenditure of this kind, and the general failure of authorities to recognise the necessity has been one of the gravest disappointments which have followed the Acts of 1902–3.

Secondary education is not a luxury to be taken or left at pleasure, but a national "necessary," as pressing in its own sphere as elementary education. The fact is obvious to anyone who will take the trouble to find out what has been or is being done outside our own borders. To take but one example from several which offer themselves: the provident and thrifty Germans have not placed a sound, liberal education for boys within easy reach of most German homes merely for the fun of the thing, or from a conviction that secondary instruction is a business of small concern to a

State. We have passed the line at which it might be said that England's dignity is compromised by her backwardness in this matter; we have reached the stage at which it must be said that England cannot afford to remain in the rear.

The recent establishment of universities and the increased grants to university colleges have partly removed the reproach, that this country is content to depend upon the pious founders of the Middle Ages for its supply of higher education. But very little has been done for the great and important educational field which lies between the universities and the elementary schools. Entirely gratuitous secondary education is probably no more desirable than it is at this moment feasible; but modern instruction is so costly, that it is hopeless to attempt to make it self-supporting. The community must come to the assistance of the individual, not for his sake, but for its own. A clearer recognition of the situation, and a more direct attempt to grapple with it, are features which would be welcome in an Education Bill bearing the date, 1906.

"Register of teachers no longer required" is the parliamentary draughtsman's curt announcement of the approaching end of the Register muddle. No doubt, when the Board of Education is less strenuously engaged, we may look for a Register which will be acceptable to most if not all branches of the teaching profession; by this time the Board must be in possession of a chart very fully marked for rocks and shoals. Still, the Bill leaves the point in doubt, as it does the position of the elementary training colleges, except, perhaps, in so far as the principles of the Bill determine the latter. We have in these columns commented upon the duty of the Board of Education to make some precise statement concerning the extent of the student-teacher's obligation to give service in public elementary schools. We are interested, therefore, in noting that clause 34 lays it down that a *local authority* may exact an undertaking from student-teachers whom it trains, or assists in training, that they will remain in the service of the authority for any time not exceeding seven years. A general adoption of this clause with a strict interpretation of its terms will have the effect of well-nigh destroying the national character of the elementary training colleges, which will become institutions for local purposes only, with the consequent narrowing of aims and means inseparable from the limitation. This is scarcely a statesman-like handling of the question, How should the teachers of the majority of Englishmen be educated? Meanwhile, the Board of Education passes on the duty of being explicit to some one else.

Apart from what has since happened, the speeches on the first reading made it manifest that this Bill could not be regarded as final. There can be no finality while the religious difficulty remains unsolved. Yet, in spite of failure in this respect, the Bill makes a decided step towards a settlement. We have been told from the platform and by the Press that the English parent will be or will not be content with this or that; that he urgently demands or does not demand so-and-s there have been no unequivocal pror on the religious question from the pai Does he desire in the popular scho biblical instruction," or "definite, prec teaching," or is he merely indifferent furnishes an *experimentum crucis*, b machinery which will show what the ma parents in a given locality really de matter; it also provides the means of to that desire. Of course, this does n problem; the principles of religious lib that the interests of minorities alsc safeguarded. But to know what the questionably want is an indispensable to a real solution of the religious dif

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The question, therefore, of the rate both absolute and relative, is all-im those who have to plan out, direct, the process of education; it is of the the problem.

On the threshold one is met by the two principles on which the whole prob They may be called the principles of All. The principle of Each requires separate individual scholar shall have for the ability which he possesses; it to him that he should be checked in h by being coupled up with scholars inferior ability, and forced to move at t pace, instead of pushing ahead at his rate of progress. The principle of A that there should be grades in the sch together in separate classes, and movi at a uniform rate of progress accordin plan of instruction. Without this p classification we have not a school, t not an army, but a horde.

The first problem of organisation is both these principles, both right in

essential, but leading to pernicious
en either is pushed to the exclusion of

normous schools which have grown up
public elementary system, and may
nder the public secondary system, we
at each is sacrificed to all. Everything
out and standardised from the year of
e year of leaving. The child enters at
n at the regulation age, is taught the
curriculum in the regulation order at
tion rate, and comes out at the regula-
the regulation product. What else can
The children pass through a kind of
cuit factory which has performed upon
in specified processes and turned them
arly as mechanical precision can effect
ne size, weight, colour, and taste, and
g the recognised stamp, "made to
This is the administrative ideal of pro-
d progress, the Act of Educational Uni-
gainst which Mr. Adkins so vigorously
n *Tekel*:—

question to be solved is, how far the
nd conceptions of the older dispensa-
ed as they were in the interests of the
e to obtain under the new; whether—to
colloquial form—the tail shall continue
e dog, or the dog begin to wag its tail;
se is impossible. Even a genius can be
ule red-ink lines, but is that enough?"
stem is not, of course, as a matter of
igid as the satirist implies. It is not
non thing for a clever lad to get through
en three standards in one year. A dis-
g head teacher has no difficulty in
n inspector's permission for such an
nt so as to give the clever boy his
his way. But, speaking generally, the
the administrative ideal is the repres-
e clever in the interest of the mediocre
rifice of each to all.

other side we have in some private
nd some others the sacrifice of all to
the school, which is always preparing
ination and endeavouring to swell the
e clever boy is taken and specially fat-
primed with spoon feeding as though
e at a cattle show. What happens to
loes not much matter: all are sacrificed
This is what we may call the racing-
al or the advertising ideal of education.
d a great vogue in England with its
orting and individualistic temperament.
Thring was never tired of tirading
. He was as zealous as Mr. Robert
d in his defence of "the bottom dog."
ordinary, average, mediocre boy have
e; he too has his right to your teach-
greater right because the greater need.
r boy can get along pretty well for
n any case; the dullard can't. It is
d dishonest to sacrifice the whole class
lliant star at the top, to pay attention
ndividual and neglect the all." In Thring's day the tendency of the secondary school was to sacrifice the average to the clever child. Most secondary schools, whether public or private, were more or less racing stables which entered their picked and highly trained thoroughbreds to the Oxford Local Stakes, the C.O.P. handicaps, or the £80 Scholarship steeplechases at the university. Nowadays our danger probably lies in the opposite direction. With the Board's new secondary-school regulations promotion must be according to almanac, and if a clever boy is pushed through more quickly it means a loss of grant; if he is a third-year boy he can only earn a third-year grant even though he be doing fourth-year work.

Between these two opposing poles the organiser has to steer his course. On the one side biological science tells him that for progress he must allow the utmost freedom for the development of individual variety and differentiating qualities, and also give the utmost scope for the selection of the fittest. "In the ideal democratic school," says the scientific expert, "no two children would follow the same course of study or have the same tasks, except that they would all need to learn the use of the elementary tools of education, reading, writing, and ciphering. . . . The different children would have hardly any identical needs. The pretended democratic school with an inflexible curriculum is fighting, not only against nature, but against the interests of democratic society."

On the other side, if he attempts to satisfy the man of science he finds that he wants an unlimited supply of teachers with the most varied accomplishments. Each boy becomes a class unto himself, and the result is a chaos, not a school. Whichever principle he adopts to the exclusion of the other leads him wrong, for the simple reason that each principle is only partially true. Behind the administrative ideal is the true principle of human solidarity and the organisation of human life for common ends; behind the biologist's ideal is the true principle of natural selection. But the administrator forgets that human beings are infinitely diverse in their characteristics and in their rate of progress; the biologist forgets that he cannot apply to child-training the ruthless procedure of the elimination of the unfit which he finds in nature, that each human life has an infinite value, and therefore no single one may be "cast as worthless to the void."

The school must be graded and classified; that is certain. And yet the organisation must be kept mobile to the inner life of the organism; that too is certain. How to achieve both these things—that is the rub.

For clearness, it will be necessary to divide the school training into three periods—the first, up to the age of twelve, the elementary period; the second, from twelve to sixteen, the lower secondary period; the third, from sixteen to eighteen or nineteen, the higher secondary period—merely noting that the ages here given are not to be rigidly interpreted. John Stuart Mill will be doing at the age of seven what the clodpole will be struggling through at the age of seventeen.

In the first period there is no difficulty about curriculum; no option or variety is required. Elementary education, as Prof. Sadler says, should contain in solution all the elements that are demanded by the different varieties of higher education. There are the three R's, the tools of education, which all must have; there is music and gymnastic, as the Greeks would say, including under gymnastic the training of hand and eye, including under music the love of poetry and the cult of the mother tongue; there is also natural science, which should at this stage be confined to nature-study. As regards promotion, the very numbers which seem to demand regimentation are really the greatest help to differentiation. If classes are reduced to reasonable dimensions there should be three classes for each year, graded according to their rate of progress into (1) quick pack, (2) medium pack, (3) slow pack. The quick pack will probably cover in one year twice the ground that is covered by the slow, and be ready for promotion to secondary work at the age of ten, while the slow pack will not be ready for that promotion till the age of fourteen.[1]

In the lower secondary period differentiation will be necessary. We now make a beginning with algebra and geometry, and many boys who are slow at languages will discover special ability in mathematics. These boys must have their head or else be kept back marking time, which is another way of saying wasting time. The whole of this section of the school must therefore be separately classified for mathematics, and, inasmuch as the early physics are necessarily correlated with the mathematics, the separate classification will necessarily include the physics and later the chemistry. In other words, boys will work according to their forms at their English subjects and languages, but will work according to separate sets at mathematics and science. Here too, if numbers permit, the problem of promotion will be solved in the same way as railway companies solve the problem of their traffic, by providing an express line and a goods line in the forms. In the sets it is not necessary, for the variation of individual speed is already provided for.

The *terminus ad quem* of the lower secondary period will be some examination of the standard fixed by the matriculation of London or the joint board of the northern universities—soon, it is hoped, to become interchangeable. The selection of some such *terminus ad quem* will fix a certain minimum attainment in both mathematics and languages, and prevent the boy who is good at the one from unduly neglecting the other. The Board, which vetoes outside examinations during the four years' course, rightly admits the external test as a kind of audit at the end of it.

Once past the matriculation standard, specialisation is both admissible and desirable. Here our "slow pack" has disappeared altogether. The members of it have come to the en tether, so far as school knowledge is not improbably, they have also come to their school age too. We have no sixteen or fifteen, in exceptional c fourteen years of age, who have carri their studies both in languages, sci mathematics to a respectable standard ment. They have also had an oppo showing in which direction their specia lie. The higher stage of secondary must give full scope to the developme special aptitudes, and must have definit to the future career or profession. sixteen in our curriculum corresponds a may be with the stage of physical d when a boy becomes a man, and, as a forward naturally to the serious side livelihood. The specialised courses will with what we may call the "honour and will be such as fit a pupil to enter honours course at the university or otl tion of university rank such as a hig of engineering or of commercial scien courses will provide the sixth forms, of the secondary-school works, pupils caught something of the passion for k who value learning for its own sake, the sense of perfection in their work it may be, who work with their master with a scholar, whose conceptions o duty are generous, who are the natural the school society and fit for the res of direction and control.

Perhaps the whole scheme can best l or at any rate made clearer, by the n diagram:—

<table>
<tr><td>ELEMENTARY
6 standards</td><td colspan="2">Quick pack
4 years</td><td>Medium pack
6 years</td><td></td></tr>
<tr><td>Age of promotion to Secondary work</td><td colspan="2">10</td><td>12</td><td></td></tr>
<tr><td rowspan="2">LOWER SECONDARY
4 grades</td><td>Grades
1
2</td><td colspan="2">ONE MODERN LANGUAGE</td><td>Separa
throu
to all
A. I</td></tr>
<tr><td>3
4</td><td>LATIN</td><td>NON-LATIN</td><td>B. I</td></tr>
<tr><td rowspan="2">HIGHER SECONDARY
3 grades</td><td colspan="3">Specialised curricula according as bias</td><td></td></tr>
<tr><td>MATHEMATICS AND SCIENCE</td><td>MODERN LANGUAGES AND COMMERCIAL SUBJECTS</td><td></td></tr>
</table>

This scheme provides a workable n school of any dimensions between th system of strict grading, by which a must advance at the same speed, an known in America as the Pueblo syst prevailed for many years at Universi School, and provided separate classifi each boy in each subject taught, *éduc*

[1] In French elementary schools it is not uncommon for a boy to get his *Certificat d'Études primaires* at the age of eleven, though the usual age is thirteen.

has been called. The scheme seems
that elasticity which is necessary to
l temperament, which is in the line of
l traditions, and is postulated by our
eds. It provides for expansion both
and latitudinal. The cycles of age
o those prescribed by the new French
and seem indeed to be indicated by
postpones the critical choice between
modern side till the third year of the
hool course, obviating thereby the
ge being necessary at a later stage,
g greater facility for careful grading
ntroduction of Latin, where grading
portant. It provides an open career
The clever boy who gets out his
e the other boy is chewing his pencil
; he is not tied by the leg to the
and so degenerating into habits of in-
fing and go-as-you-please. The slow
other hand, is not unduly pressed nor
asantly and unhealthily conscious of
riority by the ever-present comparison
re gifted schoolfellow. In the upper
division of the school, where classes
ily small, the teacher may reasonably
to give a special chance to boys who
d, and extra help to the less apt who
over a thing more than once.
stem, however carefully thought out,
ed which can be wound up like a piece
m and then allowed to run of itself.
igilance and readjustment are neces-
les and mumps, if nothing else, upset
l schemes. At the end of each term
ster will have to confer carefully with
achers to see which boys are lagging
need to be transferred to slower or
ons, and which boys are getting ahead
s and should be transferred to higher
divisions. Human nature can never
l by any mechanical system; however
system appears on paper in its regu-
m, and uniformity, it must, unless
in practice, violate some of the finest
ies. The school is a garden, not a
l the human factor, both in teacher
is the *unum necessarium* for the fulfil-
function in the body politic.

Our Lord. By G. P. Trevelyan. x.+109 pp. 8*d.* net.—This booklet, which is the first series, is written for children of the Church which sufficiently, perhaps, explains its point s not original in its aim of leading "children rstand, and love the Gospel story," because ery book of the same kind which has passed ands for years has been compiled with a like But the book follows a method which is e may also add, interesting; and it ought to and they are many) who cannot live without tic instruction, with sufficient information to to understand what is implied by adherence ular school of the Church of England, the which it enforces with admirable directness

IS SCHOOL SCIENCE WORTH HAVING?

By Prof. H. E. Armstrong, Ph.D., LL.D., F.R.S.

NO; never! Well, hardly ever!

Although during more years than it is now pleasant to recall I have been a persistent advocate of the introduction of the teaching of scientific method into schools, it is daily becoming more and more evident to me that, excepting in isolated cases, school science is of little value: of several hundred students who have been under me during the past half-dozen years or so, coming from secondary schools all over the country, extraordinarily few have given proof that they had derived any real benefit from their training; it has been clear that neither has their curiosity been awakened nor have they acquired the habit of working in a methodical and honest manner. A boy entering college from school, who knows what an experiment is and who understands how to set about making one—who has some sense of exactness and has been taught how to use his fingers and to be careful and neat—who can without hesitation write out a faithful, legible account of what he has done which is readable—is a living wonder. Yet our main object is supposed to be to teach the experimental method—the art of exact experimental inquiry. The worst feature of all, too often, is that a nescient attitude has been engendered which makes recovery at college from the bad habits acquired at school almost impossible except in the case of the very few who are really gifted with genius. The greatest sufferers perhaps are those who have been prepared for scholarships and in consequence have been converted into prigs of the worst type: knowing nothing of fundamentals, these fancy that they have mastered their subject and are above going back to simple hodman's work; but few of them recover their mental equilibrium or learn to work honestly. Years of valuable time are being wasted from lack of sound preliminary training and neglect of practical methods.

While expresing these opinions, I am aware, indeed no one is more fully prepared to admit, that a strong undercurrent of improvement is already flowing and that a multitude of earnest workers is scattered throughout the country many of whom are pursuing their way under conditions which are well-nigh exasperating. I even believe that, far as the science teaching in schools may be from the ideal, it is in advance of most of the other work. But unfortunately there is no accepted organised body of opinion to guide teachers generally.

In all modesty be it said, *we know* that our subject may be made the means of affording broad mental and moral training of higher excellence than can be given through any other branch of school work; therefore we must not pause in the struggle to reach the light. Unless we are prepared to write ourselves down as utter failures and to stand disgraced before those who muddle through somehow as teachers of those

other subjects upon which the light of pure reason is not shed, we must bestir ourselves and improve our style—rather let me say, acquire some inkling of style. This is very difficult, I know, after going through the process and being conscious myself of having offended only too frequently against my own canons of belief. It can only be done by constant and stern self-criticism and if a strong desire exist for self-improvement.

I believe the fundamental fault to be that very few teachers know what an experiment is—having never carried one out; that very few have any true ideal in mind. The course which the majority go through has no claim to be regarded as an experimental course—as it involves nothing more than following instructions and the practical verification of statements made, the element of inquiry and reflection being altogether left out. No detective could ever be trained by a course such as we adopt in teaching boys in school: that is to say, if directions were given for his every act, if every step he was to take were to be anticipated, and his foot put down into every one of them—if the element of motive were entirely omitted from consideration. Knowing what can be done by the gradual development of a knowledge of method, I am satisfied that we shall make no progress until we place knowledge of method before results. We *must* teach our pupils to understand the true and full meaning of the one verb—to experiment.

Teachers in schools are not so much to be blamed, however, as are those who sit in high places at our seats of learning. The old-fashioned cookery-book-recipe style of teaching still prevails at nearly all these; and there is real danger of our becoming blatant dogmatists: ions, electrons, atomic disintegration are talked of as realities and verities, not as wholly tentative hypotheses, on a basis of evidence the equivalent of which would not pass muster even in a police court; and babes and sucklings are taught to use a technical jargon of which they have no understanding, while ravings on the origin of life are allowed to issue from a university without one word of expert warning being uttered in protection of an all too gullible public. In fact, no proper attempt is made to teach truth in the sense defined by Emerson in his essay on Intellect. Outsiders already see the coming danger. Prof. Sadler, for example, in his most appreciative essay on "Science in National Education" which has just been published, speaking of Herbert Spencer's work, remarks:—

"Therefore to his mind (and similarly to Tyndall's and to Huxley's) scientific teaching seemed inseparably connected with discovery, with the overthrow of false authority, with liberation. But it is quite conceivable that in future, when physical science sits on the throne of undisputed authority, she may wittingly or unwittingly impose upon education as heavy a weight of prescribed belief as did any earlier *régime* and may come herself to need, as an educational corrective, the sound doctrine of her earlier protagonists. All true education strikes a balance between authority and independent search, a balance for which there are no set rules but which the tact a the true teacher establish afresh for each n to its needs, to its stages of development and stances of its works. It is therefore expedie all times a due place in education for that su of subjects in which, at the time, the most st ment of inquiry and investigation and the l of old conclusions are going forward. The s is caught from teachers who are themselves simply by artificially reproducing the method provinces of knowledge which are enjoying unchallenged acceptance.

"The greatest educational service which movement has rendered is in emphasising cer which should guide the teacher in his method

After defining these, he concludes:

"Thus the fundamental issue is that of easy to speak about, most difficult of all thi in some of the intellectual questions with whi deals and in the circumstances in which th to work. And yet the touchstone of the nob memorable teaching is unflinching veracity that forms character, because it is the exp sincere character of the teacher—character, a forming character."

Surely, in teaching science in schoo object is to form character—above all a thoughtful, observant and reticent mind, to develop a logical spirit and so of dexterity. If we admit this, we shal Prof. Sadler that

"Greater intensity of work within narrow with more training in the power to think a things and with less absorption of masses is likely to give better results than are curriculum and multiplicity of subjects."

A course in which common things and a few problems appropriate to th place of teaching are worked out thor infinitely greater value than one in attempt is made to satisfy any of th laid down or the questions set by larly incompetent, commercially-mind ing bodies who are now engaged in the efforts of teachers to do their dut

There are certain matters of funda portance to be attended to.

In all cases the pupils must begi standing what they are doing—whe seeking to find out: and this must b in black and white, in pencil or ink before any attempt is made to ca experiment or observation. The Euclid is the one most to be avoided. be no heading underlined with red i "To prove that black is white," b statement of the problem which in no pates the conclusions to be arrived at. day teaching, the instruction how t experiment entirely covers up the motive; the idea that any motive oth order given by the teacher is at the b work never occurs to the student. Y

o train boys and girls to go about
t in life with definite motives in vie.
fully.

son must be driven home. To make my
lear, let me give an example. Boys
ol, as a rule, can define the meaning of
th some approximation to the truth:
usually a certain vague idea how the
an object may be determined; but ask
rry out a determination and they make
rible hash of the business. On inquiry,
ly found that they have determined a
most once or twice; they should have
ns upon dozens of determinations, so
nay grasp the full meaning of the con-
d its applications.

ıer support of my contention, let me
ıer illustration from experience. The
of a large class all determine the density
ter and find it to be about 1,025 grams
Three or four months later an examina-
d and they are asked, "What about is
y of sea water?" Very few can
; the majority give values varying from
That they should have forgotten such
of small importance; what is of most
portance is that answers so detached
ıtless could be given—that it should not
ıem to consider what the possibilities of
in water of such density would be—
ad of keeping afloat with difficulty, they
ike so many corks in the water. It is
ly difficult, I know, to keep on your feet
te in quite shallow water. We are often
re should think Imperially—we may well
the advice and, applying it to our teach-
our pupils to think round the subject of
ıtever it may be.

:hing must be moral: discipline must be
By this I mean that truthfulness in
n and argument must be insisted upon:
fort must be spared to make boys and
eciate the value of neatness and of exact
t thriftiness must be insisted upon and
l of waste prevented.

egree of alertness and readiness to act
leveloped. The lack of self-helpfulness
age student at the present day is ghastly
s—spoon-feeding at school, perpetual
ning or lesson-neglecting, seem to
l initiatory power. But this again is a
ich must be reserved for discussion on
casion.

f our difficulty in teaching arises from
of the wretched subterfuges which
ractical text-books. No self-respecting
ill allow books to be used in the earlier
the work or at any stage until a
of method is acquired. Our first
st be to train our pupils to get at facts,
, to interpret observations, to under-
facts are arrived at; only when this is
they read with advantage. It is im-
anticipate all the contingencies which
in practice, every one of which will be
regarded as an opportunity by the true teacher; moreover, the motive for an experiment cannot be the same at all times and in all places. The mere presence of the book acts as a mental drag. I have urged before to-day that a book must be written in class; that the utmost care must be taken that notes are written out properly; that there must be no rough notes made at any time. The revision of notes, I know, is the heaviest and least interesting part of the teacher's work but it is little short of being the most important. Heads and all teachers must understand that time is required for it—that no other branch of the work done in a school affords the same opportunity of giving effective training in the use of the mother tongue. I am satisfied that the correlation of literary with practical teaching in schools is the one great need of our time; but probably it will be long ere the teachers of literary subjects will, of their own accord, consent to leave their chairs and set themselves to deal with practical lessons; their incompetence is so absolute at present: something must soon be done, however, to put an end to the present system by which subjects are taught in water-tight compartments, with a consequent waste of time. Many schools probably which are now understaffed because they are administered on the water-tight compartment system would be found to be well if not over-staffed if the teaching of the various subjects were correlated, and a vast amount of time would be saved. Prof. Perry has pointed out in his recent address to the Physical Society that "such a simple mathematical idea as that of a decimal cannot be given in elementary schools in less than five or six years, whereas one week of weighing and measuring would give young children familiarity and clear ideas about decimals." This advice should be dealt with from the Captain Cuttle point of view by all heads and by teachers generally.

In fine, higher ideals must be introduced into our school system. We teachers of science have a great opportunity of showing the way. Let us see to it that we lay *our* foundations well and truly and that we build thereon only with sound materials; jerry building *must* be given up; then, if inspectors or examiners complain of the rate at which the buildings rise—well, with clear conscience, we will tell them: "Go, hang!"

The Council School Hymn Book. (1) Words only. 152 pp. 6*d.* net. (2) Words and Tunes with Complete Accompaniment. 187 pp. 2*s.* 6*d.* net. (3) Words with the Melody only (Staff and Tonic Solfa Notations combined). 114 pp. 1*s.* net. (Novello.)—We have pleasure in commending these publications to the attention of all whom they may concern. The selection of hymns has been done in a liberal, comprehensive, and sensible spirit, and Messrs. Novello propose to issue this book anew, if required, with a special title-page and cover, and an appendix if necessary to meet the individual requirements of any county or school. We cannot speak too highly of the solid work done in harmonising the tunes for this edition. It is capital musicianship.

THE PHONOGRAPH IN THE CLASS-ROOM.

By W. H. D. Rouse, Litt.D.
Headmaster of the Perse School, Cambridge.

A GOOD deal of nonsense has been written about the use of the phonograph or the gramophone in schools, and it may be worth while to consider the matter from the practical point of view. I speak of the phonograph, because it is that of which I have personal experience; but my remarks will apply equally to the gramophone, or to other mechanical means of reproducing the human voice. Whatever advantages one may or may not have over the other, the same principles apply to their use; and the phonograph has this advantage, that its method of recording is not a professional secret, but is well known, and is easy, so that teachers may at a small cost make their own experiments.

The subjects of the records must be chosen by those who have experience of class-teaching. It is useless to take a collection of those records which are sold to the public for their amusement. These may often have interest, and some of them may even be useful, in class-teaching; but that will be an accident. I have heard some very fine examples of declamation in Italian, which indeed show what the human voice can be made to do, and shame us by contrast; but these can only give hints; they cannot be reproduced by the pupil, nor can they be used to check his faulty pronunciation step by step. The same is true of the French declamations made after some prominent actor or actress. For anyone who has to declaim a given speech, it is most useful to hear how the same piece is declaimed on the stage, although of course he will not copy it slavishly; but in schools we generally do not want declamation, we want simple articulation and correct intonation.

The Phonograph in the Class-room.

These are the two points which must be kept in view: articulation and intonation. For the correct utterance of the sounds, records must be made which in themselves may be dull or not dull—a series of words, for example, containing some difficult vowel sound has to be repeated slowly and very distinctly. The teacher can stop his machine after each word or group of words, for the class to imitate them; the pupils may also be asked to speak the
a machine, and the record thus produc
reproduced side by side with the mode
be much easier then for the pupil to reali
he falls short, for we do not hear ourse
as others hear us. Even more valuabl
less liable to blurring, is the reproduct
intonation, the grouping of words in t
the natural pauses, of a good speaker.
one knows who has learnt to speak in
language, the intonation and phrasing
more important than the sounds. Th
in understanding and making themsel
stood, felt by those who have learnt
German from books, is generally du
uttering the words separately, not in gr
with English intonation. Now these
admirably reproduced in the phonogr
where the separate words have not be
spoken, if this should so happen. Th
the phonograph does not depend onl
accura
which
have b
althoug
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they h
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For
too, th
be reco
ally n
schools
the tea
if he
the ma
writi
better,
cord n
for p
calcula
give
writing but not time for idling. In
a good standard may be suggested f
which have not the advantage of
teachers. Then again, songs may
and songs ought to form part of a
language teaching. Lastly, the high
require typical dialogues, or longer s
natural tones, or passages of narrative
read aloud or recited.

Such is the general plan of a series
records; and, of course, the pieces chos
higher stages of the work should be o
themselves, and should form a series
styles. They should be printed also in
which may be used in other ways if it
useful to do so.

In most English schools, modern lang
badly taught, in many schools execrab
These records should not be expected t
place of competent teachers—this they
do—but they may help less competent
and perhaps teach them also; while

ich have good teachers there is still a records. For one thing, they save the Thus a piece of dictation may be given who can set the machine going, at a perhaps all the teachers are busy elsethe teacher's time-table is full, as it under our wasteful system of managess may be instructed which otherwise to go without. Or, indeed, the teacher e machine himself, and so give himself ich he so sadly needs and so seldom eover, there is a distinct advantage in e, that it is always the same; and if e to be taught to utter sounds, they ught by frequent repetition of these xactly the same way. Turn on your once, or turn it on a hundred times, hese sounds with admirable docility, showing any signs of irritable nerves. ue that by frequent hearing of sounds and by speaking English all day long, est experts may lose a little of their cy and correctness, which they may hearing the unvarying sounds of the

iat there is also a special need for the phonograph in classical teaching. At seems to be a widespread desire to current pronunciation of Latin at least, g desire, less widespread, for a similar reek. But the prejudices of the world ng, that objectors are satisfied when aid that a reform is impossible. They dd that any attempt to return to the onunciation would waste time and t in ugly sounds. No time is wasted, asily ascertained from those who have the pure vowel sounds of Latin and ugly to those only who think that the nds of gabbled English are beautiful. ay to convince objectors of the great of a reformed pronunciation is to give Those again who wish to reform, but w exactly how—a class larger than pposed—would be grateful for the help spoken by some competent person. In also, there is practically universal need on : in the matter of quantity. Quantity to do with accent, or with stress, but the time of the vowel sound; a long ng the same relation to a short sound to a semiquaver in music. It seems say this, but it is not so; for the differwe actually hear in England is not one at all—it is a difference of stress. verage person, boy or master, who word *agēbāmus*, for example, puts a ss on the *bā*, but pronounces all four he same length. And yet it is quite practice, to give quantity accurately; reek tonic accent can be given withring with quantity, or suggesting hough this is a more difficult matter. possible to make the average person, , understand what is meant by what I am saying, unless he hears the sounds made. He probably will not believe me, but it is true, as a phonograph record would convince him in five minutes. The importance of a correct pronunciation of quantity is great: it makes spelling easy, and decreases the number of metrical mistakes made by pupils. A series of classical records would therefore be as useful in their department as those of modern languages could be.

We are still in the stage of experiment, and perfection has not been reached yet; but a good deal has been done, and I am glad to be able to testify that we have found phonograph records practically useful. It is very necessary, however, that all such should be made by persons who are actually engaged in class-teaching, or are in close touch with schools.

ACCIDENTS IN CHEMICAL LABORATORIES.

By R. L. Taylor,
Organising Science Master, Manchester Education Committee.

PROBABLY most of the readers of The School World have heard something of the sad fatality which occurred recently at the Technical School at Plymouth, whereby one of the pupils—a girl of about fifteen—lost her life. Except in the local newspapers, most of the accounts of the accident which have been published throughout the country have been somewhat meagre, and probably not many of the general public understand exactly how the accident occurred.

We gather, from the detailed account of the inquest which was published in one of the west-country newspapers, that a class of eight pupils (boys and girls) were practising the neutralising of alkalies by acids. They were shown by the teacher how to use a pipette, and they seem to have practised the use of one with water in the first place—although none of them appear ever to have used a pipette before that particular lesson. They were directed by the teacher to take some caustic soda solution, to dilute it with an equal bulk of water, and then to suck up a measured amount of the diluted liquid in a pipette, and to neutralise that measured amount with some acid from a burette. The teacher appears to have shown them how to do the whole experiment from beginning to end, and he also warned them that if they sucked up any of the solution into their mouths the consequences would be very disagreeable. But the unfortunate girl who fell a victim to the experiment did not follow out the instructions exactly. Another girl who worked with her stated that she tried to measure out a pipette full of the *strong* soda solution, intending to mix it with an equal bulk of water afterwards, and then to neutralise it with the acid. A boy who gave evidence also stated that he and his partner did exactly the same thing. By an accident, which everyone who has seen boys and girls using pipettes

knows occurs very easily, the poor girl sucked some of the liquid into her mouth, and, no doubt inadvertently, but most unfortunately, swallowed a little of it. The teacher's attention was called to the occurrence, and he tried to persuade her to drink some dilute solution of citric acid, but she, evidently in pain, and much alarmed and frightened, could not be persuaded to do so until a considerable time had elapsed. She soon became very sick, and remained ill for some days. In a week or two she was much better, but three weeks after the accident her throat became very bad. She was taken to a nursing home, where she gradually became worse, suffering great pain, and finally she died about a month after the accident had occurred. The doctor in attendance, after a post-mortem examination, stated that death was due to septic infection, set up by disease of the œsophagus, which could only be attributed to the caustic soda.

The case has caused a considerable amount of excitement, especially in the immediate neighbourhood where the accident occurred. Strong remarks were made by some of the jurymen about allowing children in schools to perform experiments in which there is clearly a considerable amount of danger. Probably many teachers of chemistry have had similar remarks made to them (although not perhaps concerning this particular form of experiment), and therefore it may not be amiss to consider as calmly as possible, and without being influenced too much by the unfortunate calamity which has just occurred, the general subject of dangerous experiments in chemical laboratories.

First, with regard to this particular accident. There is no doubt that the consequences of the accident were greatly aggravated by the fact that the caustic soda was not, as directed by the teacher, diluted with water before being sucked up into the pipette—that, in fact, the pupils did not rigorously obey the instructions given. I have no doubt whatever, in my own mind, that, if all the cases of accidents which have ever occurred in school laboratories could be carefully investigated, failure to follow out strictly the instructions given would be found to be the explanation of the greater number of them. It is therefore of the utmost importance in all cases, and more especially when the pupils are very young, that, from the very beginning of their practical work, they should be trained and taught to follow, implicitly and without variation, the instructions given to them by the teacher. Disobedience to or wilful neglect of instructions ought to be considered as one of the most serious offences which a pupil in a chemical laboratory can commit. Regulations with regard to this point cannot be too stringent.

But while the particular accident to which we are at present referring was probably aggravated by the fact that the caustic soda was not, as directed by the teacher, diluted with water before being sucked up into the pipette, it must, I think, be admitted that serious consequences might have followed even had the pupils implicitly followed the instructions as to diluting the soda. ticulars are given as to the actual stren soda solution which was used, but, diluted soda produced fatal effects when it certainly would not have been rend less by dilution with its own bulk of w quite clear that, done in that way and boys and girls, the experiment itself is a one. I really think, in fact, that we ou up the use of pipettes, in the case of yo for sucking up liquids which are in any ful. Every teacher who has allowed h use pipettes knows that it is quite a con to find that one or more of them hav little of the liquid into their mouths. one does not expect them to swallow unexpected evidently sometimes hap there are many liquids which, while pleasant when taken into the mouth, are to swallow; and caustic soda is on Safety-pipettes, with india-rubber ba top, were suggested at the inquest; would be very clumsy. I have someti couple of inches of india-rubber tube the top of the pipette; this practicall the length of it, and diminishes the sucking the liquid up into the mouth, makes the instrument easier to control But the safest thing would plainly be using pipettes for dangerous liquids. still be used, with water or other harml for practice in measuring, but when quantities of acids or alkalies are re might quite easily be taken from a buret

There doubtless are many elements in a chemical laboratory. For my o have always felt that there is a heav bility upon any teacher who has charg in one, and that is why I insist str the necessity of training the pupils obedience to the instructions which are This matter is of sufficient importanc classes are small, but with a large numb the difficulties are increased many-fold. nately it sometimes happens that teac selves are not fully alive to all the diff dangers. It requires a long apprenti chemical laboratory to become famili numberless details which help experin smoothly, and can only be appreciate practice in a laboratory.[1] In my teacher ought to be placed in respons of a class of young pupils in a chemica who has not served for a consideral assistant in a laboratory to an experien If this were the universal regulation we hear, for example, of a teacher in a with a stick of phosphorus in his cutting off bits of it with a pair of s

[1] In the remarks which I make here with referenc training of teachers, it must be clearly understood that I a that any blame whatever can be attached to the teacher c Plymouth Technical School. From the evidence at the i long experience in teaching in a chemical laboratory, an to show, the danger lay in the nature of the experiment were performing.

m to his pupils. This incident I know
y occurred. Miracles have not alto-
ed, and the teacher referred to is still
nharmed.
e commonest accidents in a laboratory
ie breaking of a piece of glass tubing
being pushed into a cork or an india-
per. I have seen some rather nasty
in this way. I do not think that
this kind will ever be entirely avoided.
ly exercise constant watchfulness and
reiterate our warnings. When such
does occur, or with a cut of any kind,
st way I have found of stopping the
to press against the wound, and to
pressed for a considerable time, a
thick pad of blotting-paper or filter-
the wound is on a finger the paper
folded into several thicknesses and
tightly as possible round the finger.
of strong acids not unfrequently leads
cidents—especially to clothing—and it
ifficult to avoid such accidents alto-
prefer as a rule not to allow young
access to bottles of strong acids, but
the acids in such quantities as may be
any particular experiment.
om general causes such as those
above, there are really very few
iments usually performed in chemical
which can be considered dangerous.
of course, sometimes occur during ex-
ith hydrogen, especially when apply-
o a jet of the gas. But here there are
precautions with which every teacher
e familiar, and which ought to be
n as far as possible. In spite of all,
ere will be occasional explosions, but
ere need not be any great danger, un-
s used for preparing the gas. Hydro-
ever to be prepared in flasks by young
an explosion *does* occur the flask is
irst, and the pieces of glass will fly
directions. A more suitable vessel is
ce thick glass bottle of the kind known
" bottle, narrow form, with a neck
hes wide, fitted with a two-holed india-
per. I have used these bottles for
and I have never known one to burst.
xplosion does occur, the india-rubber
ly flies out and there is no particular

ing upon water with metallic sodium
le explosions sometimes occur. The
ing this experiment, which is described
est method" in the Board of Educa-
us (list of experiments suggested for
in my experience, not a safe one. It
there that the sodium be stuffed into
piece of narrow composition gas-pipe
e end by pinching, and that the tube
be dropped into the water. This, I
does not avoid occasional explosions.
ome years always allowed first-year
upils to do this experiment in the laboratory with certain precautions. They do not attempt to collect any gas, but merely see the action of the metal on the water and examine the water afterwards. The experiment is, I believe, perfectly safe provided that very small pieces of sodium are used, that the sodium is quite free from any of the crust which usually forms on it when it is kept, and that the pupils stand with their faces well away from the little basin in which the experiment is usually done.

An experiment which is often considered to be a dangerous one is the heating of oxalic acid with strong sulphuric acid in order to prepare carbonic oxide. The danger is that water may be sucked back into the strong hot sulphuric acid; but there is absolutely no risk of this if the precaution is taken of using plenty of oxalic acid. So long as there is undecomposed oxalic acid mixed with the sulphuric acid, there will be no sucking back of the water.

I am inclined to think that accidents are most frequent in the little private laboratories which boys start for themselves at home. There boys are entirely "on their own," and they very soon tire of merely repeating the experiments they have done in the school laboratories, and begin trying others on their own account, knowing nothing, and often not caring much, about any necessary precautions. I have known of several really serious accidents occurring in this way, and these have given parents and others a very exaggerated notion of the danger of a chemical laboratory, just as the occurrence in the laboratory at Plymouth has done.

After all there are accidents everywhere—in the playing-field and in the gymnasium—and I should contend strongly that, with experienced teachers in charge and stringent regulations as to obedience to instructions by the pupils, the liability to accident in a chemical laboratory is less than either in a playing-field or a gymnasium. There is no occasion, therefore, for any alarm. The lamentable occurrence at Plymouth has shown us that there is greater danger in one particular kind of experiment than we had imagined, and I therefore think that that particular kind of experiment should be dropped. But the very great majority of teachers are experienced in their work, and I am sure that they are also conscious of their responsibility, so that we may feel some amount of confidence that the liability to accidents in chemical laboratories will not become greater, but less.

Practical Object Lessons from the Plant World. By H. J. Barnell. 171 pp. (Pitman.) 3*s*.—One gathers from the preface that these "object" lessons are intended for administration to children in schools. If this is so, we are sorry for the children. The lessons are much too technical. Numerous experiments and Socratic questions are, indeed, proposed in the column headed "Method," but many of them strike us as impracticable. Nor is the information supplied in the column headed "Matter" always trustworthy. On the other hand, the diagrams—white on black—are in many cases distinctly good, and may give useful hints for blackboard sketches.

GEORGE BUCHANAN AS AN EDUCATIONIST.

By WILLIAM MURISON, M.A.
Aberdeen Grammar School.

THE French humanist de Thou in his history quotes Pierre de Ronsard as declaring that, while usually no lapse of time could efface the schoolmaster's pedantry, four of his contemporaries had nothing pedagogic about them but the cap and gown—Adrian Turnèbe, Antoine de Gouvéa, Antoine Muret, and George Buchanan. Humanists indeed agreed in considering Buchanan not only the most brilliant British scholar of the age, but also the chief man of letters in Europe. "Poeta sui saeculi facile princeps" was his usual designation; and Joseph Scaliger said that in Latin poetry Buchanan was first and the rest of Europe nowhere. Nor did his reputation rest on his poetry alone. His political opinions were famous and influential; his *De Jure Regni apud Scotos* was hailed as a masterpiece of ripe scholarship and wise thinking. The publication of his "History of Scotland" was an event in the European commonwealth of letters. Since the sixteenth century, various circumstances have obscured his fame. Yet one who recently passed judgment on his work—the late Sir Richard Jebb—called him a consummate writer of Latin. Here, however, we must confine ourselves to Buchanan's educational activities. His whole life he spent in education, as college lecturer, as tutor, as writer on grammar, as head of a college, as university organiser.

Born in 1506 in Stirlingshire, Buchanan, after a course of training in Scotland, proceeded, in 1520, to Paris, where he studied for two years. It was a crucial period in French history, and Buchanan began then to receive that bent which made him distinctively a humanist of the French type. Returning home partly because of bad health, he joined a military expedition which unsuccessfully besieged Wark Castle. The campaign injured his health, and he could not continue his university course till 1525. That spring he went to St. Andrews to study under John Major, the renowned scholastic logician. Graduating B.A., he returned to Paris, and in due time became M.A.

In 1529 he began his educational career as a regent in the College of Ste. Barbe. His daily life there receives illumination from one of his elegies. It contrasts the refreshing sleep of sailors and ploughmen with the scholar's night spent in study. Then, after an hour or two's sleep, the watchman wakens him at four, and at five the porter rings for lectures. Into the lecture-room stalks the regent, birch-rod in his right hand, Vergil in his left. Sitting down, he shouts himself hoarse to obtain silence, and then proceeds to explain and illustrate the author. Meanwhile, one pupil is snoring, another is wool-gathering, a third has been bribed to answer for an absent comrade. One is without boots, another has huge holes in his. One has toothache, another is writing home. The rod is used; loud cries and flo make a miserable day. Sometimes come in troops and listen with Phrygi They complain that their beloved Al Guido are despised. And ever behin sits the grim spectre of poverty.

The names Alexander and Guido r troversies between the scholastics and ists. Alexander de Villa Dei was th the *Doctrinale Puerorum*, a popula grammar. With the schoolmen, gr stead of being a compendium of ling had become a mass of logical subtleti theological analogies. The three pe verb, for example, were supposed t Trinity. Guido delle Colonne was t trustworthy historian of the Troja grammar and in historical criticism sided with the new men. This we from his numerous epigrams. One launched at his old teacher Major, wh provoked the attacks of many humani wrote a book, and on the title-page c "Major in name only." Buchanan says that the book is full of fictions, the lying Cretans sometimes blundere so does Major on the title-page.

After three years at Ste. Barbe, became tutor to the young Earl of C in France. In his teaching he use Latin grammar, a Latin translation afterwards published. In the prefac of the obscurantist antagonism to grammar teaching; any divergence fr was considered impious. As an ap chanan added the method of study pl Spaniard Vives for Mary Tudor. A evidently employed this method, w some of its precepts.

Pronunciation, says Vives, should l beginning, distinct and accurate; this for after-progress. Correct accentin learnt. Writing should be taught, that instruction may be taken down and e from books. "Copies" should con maxims. The pupil should learn sc heart every day; this sharpens the creates a ready memory. Drill carefu and tenses, for the English idiom cau blunders in Latin tenses. Use Linacr and Erasmus *De Constructione*. *Colloquia* should be used for convers must be diligently practised. Let th and imitate accurate speakers. Dial be written by the pupil on familiar clothes, parts of a house, food, divisi musical instruments, furniture. Tea meanings of words. Give much prac lating from English into Latin, choo passages both grave and gay, sucl matter useful for life, consolations ir wise and true opinions to expel fals fancies. Stimulate by rewards, by praise. Sometimes urge one on another. The authors read should

l knowledge, but also teach how to live
e. Vives recommends Cicero, Seneca,
in Latin); Plato's *Dialogues*, especially
overnment; Jerome's *Epistles*; some of
's works; Erasmus's *Institutio Principis*,
n, and *Paraphrases*; More's *Utopia*; for
lorus, Justinus, and Valerius Maximus;
Testament; and the Christian poets,
s, Sidonius, Paulinus, Arator, Prosper,
These, he says, often rival the classical
legance, and in other respects surpass
uch as the divine surpasses the human.
ave a reference to an educational dis-
ne teachers, among them Colet, rejected
al poets for their paganism; others, as
rejected the Christian poets for their
ty. Buchanan, as we see from his St.
cheme, preferred the classical poets just
itated their epigrams, iambics, and

controversy, the Ciceronian, was agi-
olars. At the Renaissance, Cicero was
y and very widely adored. Some
in writing Latin prose, admitted no
ord, or form unless found in Cicero.
was no Ciceronian; like Poliziano and
he drew freely on the rich stores of the
ue.

535, Buchanan returned to Scotland,
e tutor to one of James V.'s sons. He
mpoon on the Franciscans, not because
rotestant views, but because clerical
sloth, and self-indulgence invited
exercise their wit and Latinity. James
to further attacks on the Franciscans,
539, got Buchanan imprisoned. He
England and thence to France.
next three years Buchanan lectured in
e of Guienne at Bordeaux. The lec-
e accustomed to write Latin dramas for
s to act, partly to perfect them in de-
partly to counteract the love of the
rality plays. Buchanan composed four,
al and two translated from Euripides.
were originally done when he was
reek, that he might get the meanings
more exactly—a frequent device in the
teachers of Greek outside Italy. Mon-
s a pupil at this college, and for a time
vith Buchanan. Years after, he told
that he meant to write on the educa-
children, and to advocate what
's father had devised—an environ-
Latin to the complete exclusion of
ular.

Buchanan went to Portugal to help in
g a college at Coimbra. The Jesuits,
getting control of it, accused Buchanan
and imprisoned him in a monastery, to
ed by the monks. Could the irony of
rther? One of the shrewdest intellects
erudite brains to be taught by men
lescribes as quite unversed in the truths
, though neither unkindly nor ill dis-
Portugal, Buchanan began to turn

the Psalms of David into Latin verse—mostly in Horatian metres, and largely in Horatian phraseology. This won him immense reputation, and kept his fame living for generations. Many humanists turned the Psalms into Latin verse; a critic of that age remarked that, while reverence characterised the German versions, and elegance the Italian, Buchanan surpassed them all in variety of thought and purity of style. His Psalms long continued a favourite school-book in Scotland. Sixty years ago they were still in use in the Aberdeen Grammar School.

After leaving Portugal, Buchanan was again a college lecturer in Paris, and for five years tutor to Maréchal de Brissac's son. Having joined the Reformers, he returned to Scotland in 1561.

Soon after, we find him reading Livy with Queen Mary and acting as Court poet. Like More and Erasmus, he believed in the higher education of women. It was indeed an age of learned women in England, Germany, and France. Buchanan addressed poems to several of these—to Queen Margaret of Navarre, to Queen Elizabeth, to Mary Queen of Scots, to Lady Cecil.

In 1566 he was appointed principal of St. Leonard's at St. Andrews, but before that he was on a commission to reorganise the three colleges there. Though his scheme came to nothing, the part dealing with instruction in humane letters gives his idea of a secondary school with a preparatory department. Instruction is exclusively in classics, for Buchanan had the humanist's scorn of vernaculars as lacking the qualities that made classics specially valuable for training and culture.

In the sixth or lowest class the pupils are to learn elementary grammar and read Terence. The regent shall dictate the Terence, word by word, and give the accent carefully. Then he must dictate the interpretation in Scots. The class shall be divided into decurios, in each of which a nomenclator shall be responsible for the correction of written work. If any blunder is left unmarked, the nomenclator as well as the writer shall be punished. The pupils shall do composition every day, and be "constrained to speak Latin." Note that Latin conversation was compulsory in the humanist schools. At Strasburg, for example, to speak in the vernacular was punishable by flogging. In classes four and five, Terence, Cicero's epistles, Ovid's epistles or elegies, Erasmus *De Constructione*, and more advanced composition are prescribed. The work of class three includes elementary Greek, Ovid, Cicero's epistles and easy speeches, composition, and Linacre's grammar. For classes one and two there are recommended Cicero's speeches and rhetorical works, Ovid, Vergil, Horace, Homer, or Hesiod, verse composition, and declamation. For three hours on Saturday these two classes are to dispute, one against the other, on themes chosen by themselves or by the regents of other classes. At the end of the year, in August, the two best students are to receive

"caps," and holidays follow till the beginning of October.

From 1570, Buchanan was tutor to James VI., whom he endeavoured to make a sound classic and a good king. The details of his training are unknown, but we may conjecture that it was modelled on the St. Andrews scheme and on the method of Vives. From the latter Buchanan departed in one particular. Vives says nothing about punishment. If Mary Tudor committed a fault, one of her companions was to be praised, in Mary's hearing, for the corresponding good quality. That, however, was not manly enough for Buchanan, and James suffered punishment in his own person. The young Earl of Mar had a sparrow which James coveted. One day, in a struggle for the bird, it was killed, and Buchanan promptly boxed James's ears. Another day, James and Mar were playing so noisily that they disturbed their tutor, who at last threatened punishment. They had lately written a theme on the incident from which Angus was nicknamed "Bell-the-Cat," and James saucily inquired, "But who will bell the cat?" Thereupon Buchanan castigated him in time-honoured fashion. But to return. We know James's daily work at one period. Greek came first—the New Testament, Plutarch, and Isocrates. Breakfast was followed by Cicero and Livy or modern history. The afternoon's work comprised composition, and at times arithmetic or cosmography, or logic and rhetoric. Whatever the special method, James ascended the throne with more classical learning than any other modern king.

Buchanan, with his views of kingship as instituted for the benefit of the nation, wished James to aspire to be the father of his people and their exemplar in everything good. In dedicating to James the *De Jure Regni* and the drama *Baptistes*, he said the former would show the ideal Scottish king, and the latter, in which Herod typifies the wicked tyrant, would prove that if James turned despot the fault would be his own. But, alas! in 1584, only two years after Buchanan's death, the Scots Parliament condemned the *De Jure Regni*, and English history shows that the charms of divine right were too potent for James to resist.

Pope speaks of the "ruling passion strong in death," and an example of that might be found in Buchanan. Education was with him a lifelong passion; even in his last days, when he was confined to his room, it dominated his nature. Some visitors once found him teaching his body-servant, a young lad, to spell a, b, ab; e, b, eb; &c. One of them said, "I see, sir, you are not idle." "Better this," quoth he, "than stealing sheep, or sitting idle, which is as bad."

To Buchanan, then, the aim of education was not merely to teach grammar and a good Latin style, but also to unlock the treasures of knowledge contained in the classics, that the learner might win culture therefrom and be moulded in character so as to become a worthy citizen and a good man.

SPORTS WITHOUT PRIZ

By Arthur Pickles, A.R.C.Sc.

THE annual athletic sports provid all schools the gala-day of th day of all others which attract friends to the school in full array. have certain devotees; school entertai be patronised by a few, but it is on th that the boys are encouraged and admiring relatives in greatest numb mothers attend to see how Reggie look in their new running togs; fond out their brothers to friends; and elder brothers follow with grim interes of the race.

It is unfortunate, however, that thi sion which subjects the boy to mo than any other of the year, should b the one occasion on which he strug rather than for the school, and for pe fication almost to the exclusion of the which nerves him in other school desire to bring credit and honour t or house or school, irrespective of h success. In cricket, football, hocke and every other corporate game, the sonality is merged in that of the tea knows no separate existence. Playi school eleven, he must not conside batting average if the success of the si that he should play a forcing and rec Similarly with the games of hockey a it becomes a matter of indifference wh of the team scores the goals so long scored; and to the end of winning, and selfish ambition must be enti dinated. It is a case of everythi common weal, and nothing for self.

With athletic sports, as usually co we ignore the possible exception of war, there is nothing of this advan attends the corporate games—which, one of the most important of the man which go to make games of such gre educational influences. It correspor lesson which every boy must learn ir life—namely, that he does not live to for himself, but that he is part of the or organism, whose honour he shoul his honour, and whose disgrace is h If, therefore, a corporate character c to athletic sports by any scheme, th the educationist is greatly enhanced.

Another feature peculiar to athleti that success in them is rewarded b prizes, which in schools usually take silver cups—a form of prize undesira as being eminently suggestive of some opposed to training, and with which has no concern whatever. Apart fro fact that they are of considerable va itself lead to grave abuse. Finding are able to convert brawn and musc equivalent of solid cash, many boys m

profession of "pot-hunting," thereby
oundation for the curse of profession-
ames, with all its accompaniments—
"transfers," jobbery, and gambling.
ng boy athlete is often taken up by
ho offer to keep him and "run" him
comes to the front in athletics. That
eing degraded in England by profes-
s a truism, but that its roots are so
is not generally recognised. If our
to be kept sweet and clean, something
to be done to raise them above the
rottenness on which they are being
ed.

ibility of prize-hunting is afforded by
gers'" and "invitation" races—that
hich are thrown open to the boys of
ols, and are largely in vogue. They
temptation to go the rounds and
biscuit-jars, fish-carvers, salad-bowls,
titude of other things in far greater
han the winner can ever use in his
expensive inutilities which only have
in so far as they necessitate the
is insurance premium.

f these considerations, it is interesting
w the Manchester Grammar School
completely reorganised recently, and
incipal ideals which guided their re-
n, viz. :—

ive a corporate character to them.
move the element of personal gain.

sation of the first of these objects pre-
reatest difficulty, especially in a day-
the Manchester Grammar School. In
adopted by the committee the whole
split up into four divisions, each con-
ut 200 boys, who were, approximately,
age. Thus the first division contained
ransitus, and fifth forms, and, as the
nathematical, and modern sections of
all put in competition with each other,
ting sets fell into the first division. The
with the other three divisions. Chal-
ls were offered for competition in each
ne shields to be hung for one year in
the form in each division that secured
number of marks, according to a pre-
scale. In the awarding of marks, a
feature was that in some of the races
e not only given for the first three
t is, to the prize-winners—but also to
ached a given limiting standard. In
e (open), for example, the marks given
19 marks; 2nd, 17 marks; 3rd, 15
nit, 2min. 30sec., 4 marks. An in-
vas thus held out to those boys who
e able to secure a prize, but who were
h the limit, to enter in order to secure
heir respective forms.

ay the competitors in the sports were
thing to strive for apart from their
n—the honour of their form. But ex-
zes were not given to the winners of
Instead of such prizes, small bronze tokens, engraved with particulars and bearing the school badge, were offered to them as a memento of the occasion, and personal distinction was thus secured without any personal reward.

Incidentally, one outcome of this system is that handicaps cannot be given under it, and a fruitful source of difficulty and annoyance passes out of sight. "Invitation" and "strangers'" races find no place in this scheme; they are banned, and rightly so, for they only appeal to the mercenary side of the boy's nature, and are an incentive to the "pot-hunters," whom we are strongly desirous of eliminating.

What objections can be raised to the general adoption of some such scheme in our school sports? The only argument likely to be urged against it is that the scheme does not offer sufficient inducement to the boys to take that trouble in training for the sports which is necessary to success, and as a consequence it may be stated that sports could not be successfully organised with such a basis. If that were so, it would be infinitely better to have no sports, or inferior sports, than sports made successful by the value of their prizes. If a boy enters solely for the prizes, we can do without the boy; if not, we can do without the prizes; and upon this dilemma the whole case rests.

But is it a fact that sports are impaired when there are no prizes of monetary value offered for competition? The recent experience of the Manchester Grammar School does not suggest an affirmative answer to this question. More than double the number of entries were taken than had ever been recorded previously in the school, and heats had to be run off on five preceding days in order to weed out the competitors to a manageable number for the actual sports day. Further, the times for the races were better than in former years—a fact, however, upon which one cannot lay much stress with but one year's experience under the new arrangement, for the character of school athletics necessarily varies from year to year. But it remains that these sports were an unqualified and unprecedented success.

They stand as an experiment of great value, for they prove that our English sport need not depend upon the mercenary spirit for its continued and prosperous existence. The noblest deeds of English history are enshrined in relics which are commercially valueless. The Victoria Cross is manufactured for 3½d. The shot-torn flags which hang in our cathedrals and abbeys are valueless as a marketable commodity, but intrinsically they are priceless, for they commemorate the heroism and bravery displayed in many a stirring fight for our national existence. David had this essential difference between pecuniary and intrinsic worth in his mind when his followers fought their way to and from the well to bring him water. Overcome by their devotion, and knowing that the water had only been obtained at great sacrifice, he exclaimed: "This is not water; it is the blood of the men who went in jeopardy of their lives."

The highest honour to the Greek athlete was the coveted laurel-wreath which faded almost as soon as won in the Olympian games, and it was a Persian—to the Greek a man of inferior race—who marvelled that the Greeks strove with so much toil and agony for such a tawdry prize. It is essentially the same to-day as with the Greeks. The English schoolboy is not sordid by nature, but he is too often spoiled by the allurements we have described. The school, as well as the boy, is better for this new scheme of sports—more *esprit de corps* and more of that "all-togetherness" accruing, which go so far to make schools permanently helpful and a lasting success.

CAMBRIDGE LOCAL EXAMINATIONS, 1905.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

THE forty-eighth annual report of the Local Examinations and Lectures Syndicate of the University of Cambridge contains the general reports of the examiners in the different subjects of the examinations of December last. The following remarks, culled from the reports, are intended to indicate certain widespread failings of candidates, so that teachers may know in what directions special efforts should be made so that the standard of work this year may be raised. The order of treatment follows that of the report itself.

COMPULSORY SECTION.—Reporting on the work of preliminary candidates in *Arithmetic*, the examiners say that, at many centres, decimals seemed to be regarded, not as a simplification, but merely as an artificial complication introduced for the purpose of examination; the most absurd reductions to vulgar fractions were much too common. Simple questions on £ s. d. were repeatedly and uselessly reduced to farthings, with the consequent necessity of reduction back again. Another frequent source of error was the unnecessary reduction of shillings and pence to fractions of a £.

In the answers of 25 per cent. of the junior candidates to the elementary part of the *Arithmetic* paper, inaccuracy in such simple rules as addition and multiplication (addition of three simple numbers, and multiplication of a sum of money by ten), and the mistaken idea that approximation was to be applied to all questions, proved fruitful sources of error. Want of method was very frequent, making the work not only hard to follow, but in many cases impossible to follow. Cramped style (calculations done on a margin of the paper about an inch wide) spoilt much work that would otherwise have been good, with the result that in many cases the candidates were unable to pick out the correct answer, even when it had been obtained. In the harder part of the paper only one question was solved correctly by any large proportion of the junior candidates. The methods of solution were often unnecessarily long: this was most marked in the an question on the cost of a hollow cy where the complicated methods adopte ing the amount of material in the bo to errors which simpler methods w avoided.

The failures in *Arithmetic* of senior were generally due to inaccuracy, accompanied, if not caused, by slovenli working. Many of the candidates dic the number of square yards in an acre.

ENGLISH SECTIONS.—A majority o liminary candidates failed in the *Englis* paper to explain clearly the conjunctiv relative pronoun and could not give an an infinitive as the object of a senten

The examiner of the candidates in C says that more attention might with have been given to punctuation. T "and" or "and so" to connect strin sentences was overdone by the weaker

In *English Grammar* a large numbe candidates missed the distinction betw and a *thing*. The analysis was weak.

The answers of junior candidates to on *Shakespeare's "Twelfth Night"* evidence of the unintelligent study of n girls, though they more frequently err reading the questions and giving muc for information, on the whole knew t better than the boys. Indeed in s centres it seemed as if the subject ha seriously studied at all.

The composition, style, and arran a large number of the papers of s didates were much below the proper and seemed to show that the candi not had sufficient practice in writi and correctly their own impressions of and incidents in a Shakespearean p general weakness in composition w attested by the quality of the "simple p which the candidates were asked to t ticular passage. Answers which dema independent thought were disappointin

Almost all the junior candidates answers on *Scott's "Ivanhoe"* thought best drawn character" meant the mos character, a mistake which led to numbe instead of literary essays.

Many senior candidates in answering on *Milton's "Samson Agonistes"* shov conception of what is meant by "parap some turned the passages into indire others were either too diffuse or too was disappointing to find that a qu Milton's blank verse was attempted by and generally with no success. The majo candidates appeared to have read the pl paying any attention to the most ordinar of blank verse in general or of Milton's b in particular.

Commenting on the answers to th *Authors* paper the examiner remarks th must be said against the mere repro

riticisms; there were some instances of
ıot many.
nglish History answers of senior candi-
e was a want of clear apprehension of
ing of certain common terms: *e.g.*,
nt" was often confounded with "Epis-
There was much confusion of thought
ıic subjects.
iderable number of the preliminary
showed a general want of precision in
graphy answers, particularly in fixing
ns of mountains, rivers, countries, and

ignorance of *physical geography* was
senior candidates, pointing in many
unsound methods of teaching, while
as not lacking of the use of inaccurate
information. The geography of Eng-
ed to have been neglected. Greater
map-drawing would result in a saving
any papers were unfinished because time
taken up in writing long descriptions,
to the point, which a sketch map would
ered unnecessary.
AL SECTION.—The failures in *Latin*
were comparatively few among pre-
andidates, though the mistakes made
ost always the same, and were more
in the cases and genders of substan-
in the forms of verbs. Successful deal-
he piece of unprepared translation was
failures seemed to arise less from
of words than from inability to follow
uction of the simplest sentence. This
still more apparent in the attempts at
n.
akest answers in *Latin Grammar* of
didates were, in general, those to the
on the comparison of adjectives and the
n of verbs; but the parsing was on the
ellent, and in many cases redeemed a
rwise weak. The explanation of par-
tactical uses was seldom accurate in all
d the attempts to convert direct into
eech were especially weak.
LANGUAGES SECTION.—In the *French*
paper of junior candidates the accidence
and inaccurate; and except at some
was clear that insufficient attention had
ted to this part of the subject. The
are disposed to think that a good many
lidates who had been taught on the oral
d not yet learnt the proper spelling of
y knew how to pronounce.
en French some of the senior candidates
little power of conversing, and not a
d what would otherwise have been a
performance by errors in accidence and
syntax. The majority of the exercises
on were satisfactory, but in many
it appeared that insufficient attention
aid to this part of the subject, as candi-
had made fair progress in other respects
d a disregard of grammar and the sense
sage.

The set books in *German* were often carelessly translated by the senior candidates, and it was clear that no great pains had been taken in their preparation. The composition was unsatisfactory. Many versions showed lamentable ignorance of the simple rules for the position of the verb in a German sentence, and elementary blunders in syntax abounded.

MATHEMATICAL SECTION.—Comparatively few of the preliminary candidates knew how to draw a perpendicular to a straight line from a point outside it, and many made mistakes in measuring an obtuse angle.

The theoretical work in *Geometry* of the boys was much below the standard of the preceding year. The newer proofs of the equality of the base angles of an isosceles triangle were written out well on the whole, though wrong constructions were often made; the old proof was given by a large number, in most instances correctly. The proofs of the congruence of two triangles having equal sides were often worthless. Few candidates gave satisfactory proofs of the propositions from the third book of Euclid, though many attempted them; many appeared to have been hurried on to the third book before they understood the earlier propositions of the first. The mistake of assuming the congruence of two triangles with two sides and an adjacent angle equal was again not uncommon, and, even when the triangle was right-angled, very few stated the fact as an essential part of the argument.

Few junior candidates made use of the simplest test for a parallelogram by measuring the angles. In the question involving the determination of two points as the intersection of two loci, a considerable number were familiar with the locus of a point equidistant from two given points, but not so many with the locus of a point equidistant from two given lines, while few were able to combine the two ideas.

Not more than 30 per cent. of the preliminary candidates offering *Algebra* appeared to know that the product $a \times 0 = 0$. Comparatively few of the candidates were able to deal properly with the simplification of fractions. Very few showed any knowledge of geometrical progressions, but the question on graphs was well answered by many of those who tried it; it is a matter for regret that so many schools seem entirely to ignore this branch of the subject.

NATURAL SCIENCES SECTION.—In the case of junior candidates taking the *Experimental Science* papers, the questions on density, parallel forces, and the inclined plane were not done well, and the answers to a question on the barometer were disappointing. In the practical work there were fewer good determinations of the density of a solution than might have been expected. Of the candidates who did the alternative experiment on the latent heat of steam, many were unable to deduce from their observations a value for the constant, while some contrived to get a nearly correct result by erroneous methods.

The descriptive answers in *Chemistry* of junior candidates were very satisfactory, and showed that the teaching of this part of the subject had been careful and thorough; the questions bearing more on theoretical points were not so well answered. Apparatus and experiments were accurately described, but the interpretation of the experiments was not good, the meaning being too often altogether missed. The methods adopted in the calculations were very generally correct, but arithmetical inaccuracies of the most elementary kind were regrettably frequent. In the quantitative practical work the chief error was in not confirming, by two weighings at least, the increase and the decrease in weight of the substances heated. In the qualitative work there was insufficient evidence of confirmatory tests having been used.

A large proportion of the junior candidates taking *Heat* defined the coefficient of apparent expansion of a liquid as the expansion of one gram of the liquid, and this was often the case where a good description of the use of the weight thermometer was given. It was surprising to find how many candidates were of opinion that the common alcohol thermometer could be used to determine the temperature of steam.

Their work in *Sound and Light* was disappointing; it gave little indication of experimental study or of interest in the subject. The answers showed that elaborate apparatus had been described to the candidates, or that they had read of such in books, whilst simpler experiments had been neglected. Few of the candidates were familiar with the phenomenon of "beats," and fewer still described them as though they had heard them. Nearly all distinguished a real from a virtual image by stating that the first could be thrown on a screen. They ought to be taught that in many cases the illumination is insufficient for the real image to be seen on a screen. Many too had the idea that, when light is passed through a prism, no dispersion occurs until the light passes out of the prism into the air.

The description by junior candidates of botanical specimens was well done; but in a certain number of cases it was evident that candidates had devoted much time to learning by heart the details of an elaborate nomenclature and had neglected the exercise of that careful observation which is the foundation of a knowledge of *Botany*. It cannot be too strongly urged that a scientific term should not be introduced to a young student's notice till he has himself discovered the need for the term. Few candidates were able to make quite accurate drawings of germinating seedlings. The frequency with which candidates described a wrong experiment seemed to indicate that, though the experiment had impressed them, they were unable to connect it with the phenomena it purported to illustrate.

The physiological work of senior candidates suffered from lack of experimental training; it was clear that very few of the candidates had actually seen a water culture.

THE AGE OF TRANSITION

THESE books serve to show how the in English literature is growing country; the first also suggests a to temper zeal with discretion. We can mend Mr. Snell's style. It is jaunty, di and allusive, when it should be direct an There is no room for waste in short m this kind, and it is distressing to find, the beginning, so much misplaced jesti see in the remarks on Occleve (i. 18, 1 needless remarks on the word *Quair* (p. 6 describe not only what it is, but what Dignity we look for in a history of literature, enthusiasm we are glad to but we do not always feel in the humour nor do we see what is gained by sayin account of Stow, that he does not come a in this period, but "there is left a go of him sprawling over our frontier line"

Against these obvious faults much g be set. Mr. Snell has studied his su himself. He includes not only writers be found in every history, but others not, although important. Literary very commonly neglect our prose write sixteenth and seventeenth centuries, wi exceptions such as North and Berners. has something to say of Coverdale, Foxe, the Chroniclers, Nash and his circ the distinguished but forgotten band bethan prose translators, such as Fe Golding. We think he has not gone fa in this field—a very important one for tory of English prose: thus we miss Ti Whittington, with other of the pioneers o prose style. But it is something to h a beginning. Mr. Snell has the merit o his own judgment on the authors and describes; and the books should prove v to teachers, although their style makes suitable for the more impressionable a pupils.

Mr. Wilson's essay, which gained t ness Prize in 1904, is a critical study place in literature. He has a good sub one of great importance, not only b Lyly's association with Euphuism, bu Lyly as a novelist and dramatist has be rated. Mr. Wilson has something ne on Euphuism, which is remarkable afte has been written on the subject. He tention to the influence of Spanish lit the sixteenth century, and in particular a where Lyly studied. He sees the style in Hakluyt, Gosson, and other Oxford circle, and he regards the creati style in England as due in no small North and Berners. Guevara has hith given credit for the fashion, but Mr

[1] "The Age of Transition, 1400-1580." Vol. i. The Poet Vol. ii. The Dramatists and Prose Writers. xxix.+167 pp. (Bell.) Each 3s. 6d. net.

"John Lyly." By T. D. Wilson. ix.+148 pp. (Cambri Press.)

t that "Berners was writing Euphuism five years before Guevara published his Spain." Alliteration, which counts for in the English writers, is not found ra; and that we know is peculiarly being the main mark of early English Mr. Wilson thus takes something from ne, but he adds to it in other ways. He e importance of Lyly in the history of , and gives him the credit of discovering dience in the "ladies and gentlewomen ıd," who have been ever since the chief ding public. It was a clever stroke to ıe scene of the novel from the realm of to the lady's boudoir. He also does Lyly as a writer of comedy; he is always telling his story, often graceful and ı dialogue, and his comedies, although often as a subtle flattery to the Queen, able for their own sakes. Nor does Mr. ɔmit to notice the author's charming ich are not yet forgotten. Construction ever, Lyly's strong point in drama; his drawing is not so successful. This is an interesting essay, worthy of a place on s of those who love our literature.

LIZABETHAN SCHOOLMASTER, AND OTHER SUBJECTS.[1]

ıe first time this Elizabethan MS. now s the light of publicity, and naturally es great expectations. It contains some Latin from a son to a father; in Eng- , excuses to a friend for neglecting to a schoolboy from his brother, to a ıanking him for money, testimony of from neighbours to one F. B., recom- ı of an Oxford man as a schoolmaster, obtain books "as a recompense" for a 7 made to Parson Anne's husband, and ers. Then there are entries in the com- book as to the duties of bishops and excerpts from an historical dictionary, ecipes, diet prescribed by Mr. Edwarde, of Physic, Oxford. Then come proverbs ia, reminding the reader of the com- nearness of the time of Erasmus, a of the degrees of consanguinity for- marriage, list of dangerous days in all for anyone to fall sick upon, religious , application for a schoolmaster's licence shop, excerpts from Susenbrotus, and so thus a medley of entries in an ordinary lace book, and much of the volume, small is not specially of interest as a con- document in the history of education, directly a good deal of information may ed as to the general ideas interesting to culture of the period.

Unfortunately, the exercises which are included in the MS. can scarcely be all described as specimens of school work. The most important performance is a theological exercise presented at Oxford in the Theological School by one Edward Ann(e) in 1578. The editor of the volume is inclined to think that his ancestor, John Conybeare, wrote this exercise for Edward Anne, who was probably his pupil. Then follow shorter theses, *e.g.*: (1) An sancti sint invocandi? (2) An sacerdos possit remittere peccata. (3) An liceat jurare: together with quatrains of Latin verses on those questions.

The distinctively school exercises seem to be as follows:—about five schoolboys' letters; the transcripts of adages; the excerpts from Susenbrotus; and certain rhetorical exercises, of course in Latin. These include the following subjects: (1) Quid est veritas? quid mendacium? (2) Felicitas activa praestantior est felicitate contemplativa. (3) Latin verses on Vivat Regina. (4) Latin quatrain: Discipulus orat ludendi veniam. (5) Quatrain on: Animi boni rari sunt. (6) An authoritas philosophorum sit veritati in rebus philosophicis anteferenda? (7) Nemo in hac vita felix. (8) An monarchia sit optimus reip. status? (9) An melius praesint suo freti consilio quam qui amicorum consiliis adjuti? (10) An omnia appetant bonum? (11) Discipulis. (12) Labor omnia vincit improbus. (13) In superbiam. (14) Non nobis solum nati sumus sed reip. et posteris.

The subjects thus given are interesting. Unfortunately, the editor does not give these rhetorical exercises in full. He omits the major part as "lacking in interest." Accordingly, the school-historian loses the very subject-matter that he would most wish to have in full. The account that is given of John Conybeare, naturally, is somewhat "thin," so that we see little of the school exercises and of the schoolmaster in that Elizabethan era, in which we should so greatly wish for a complete contemporaneous account of the country teacher of a grammar-school. To make up for this, an autobiography is given of Dr. W. D. Conybeare (Dean of Llandaff), 1787–1857, which has its interest. There is also the Conybeare pedigree, written by the Dean; and, in addition, six specimen facsimiles of the MS. It should be added that the book is carefully edited, and no pains have been spared on the introduction and in the accurate reproduction and annotation of the text.

[1] nd Exercises of the Elizabethan Schoo'master, John Conyaster at Molton, Devon, 1580, and at Swimbridge, 1599; with Fragment of Autobiography." By the Very Rev. William are, Dean of Llandaff. The whole edited by F. C. Conybeare. rde.) 10s. 6d. net.

The Voyage of Captain James. 118 pp. *A Sojourn at Lhassa.* 112 pp. *An Embassy to the Great Mogul.* 135 pp. *The Adventures of Montluc.* 117 pp. *The Siege of Jerusalem.* 132 pp. *Prescott's Conquest of Peru.* 128 pp. *De la Motte Foque's Sintram.* 140 pp. (Blackie.) *6d.* each.—In these booklets Dr. Rouse continues his original plan of providing attractive reading-books from sources not customarily tapped in educational work. We wish him heartily the success he deserves, for in all the little volumes lying before us he has done his work brilliantly.

NEW EDITIONS OF SOME GREEK AUTHORS.[1]

WE have before us two excellent books from the "College Series of Greek Authors" published by Messrs. Ginn. The first, "Selections from the Septuagint," embodies a new idea which is likely to be very useful. Every public schoolboy has to do his Greek Testament, and as a rule he has nothing to illustrate or to explain the peculiarities of the style in which the New Testament is written. In many respects the Septuagint differs from this, but it resembles it still more. The editors of the present book have prefixed a grammar of Septuagint Greek, filling seventy-five pages, in which illustrations are drawn from the Septuagint, the New Testament, and the classical language. It is thoroughly well done in all respects except one. All discussions of Hellenistic Greek ought to look forward as well as backward. It is very remarkable in how many points this language is illustrated by the language of the succeeding centuries, and by modern Greek itself. Unfortunately, scholars pay little or no attention to the modern Greek language, and in this respect a useful addition could be made to the grammar which might show at the same time the continuity of the language from Homer to the twentieth century. Prefixed to this book is a general introduction including a critical examination of the circumstances in which the Septuagint was made. The old familiar fables are shown to be false, and the work is seen to have been spread over a long space of time. The questions here discussed are intricate, and we confess that the authors are not always quite clear. The body of the book consists of a number of stories—Joseph, the Exodus, Balaam and Balak, Samson, David and Goliath, Elijah, and Sennacherib. Each of these is preceded by a special introduction which treats of its subject in a fresh and stimulating way. Thus the editors dwell on the literary quality of the story of Joseph. Again, the Exodus is illustrated by the accounts of Josephus and of Alexander Polyhistor, taken from Artapanus, and that of Manetho, with some other writers; and a few words of criticism are given on the credibility of the tale. In the story of Samson are seen the elements of the Greek tragedy; in the combat between David and Goliath, the spirit of Greek epic. Briefly, in each section some new and interesting points are singled out for discussion, and, all through, stress is laid on their literary side. The whole is provided with excellent notes, giving explanations, references, and illustrations, and the Hebrew is always kept in view. This book is a real success.

The "Selections from Lucian" does not, like the first, break new ground. There are other selections from Lucian in existence, but this, we think, is better done than its predeces book contains "The Dream," "Cha of "The True History," "The Sale "The Fisherman," a few dialogues account of that extraordinary charla grinus. Each piece has its own intro which the editor discusses its place in traces its descent, and gives literar These introductions show wide readin direct the lover of good stories to n which he will be called to know. W ticularly delighted with old Hans Sacl *affenland*. The idea of the ripe bumpk into a pair of ready-made boots is fine

> "So wachsen bawern auf den Bawmen
> Gleich wie in unserm Land die Pfl
> Wens zeitig sind so fallens ab
> Yeder in ein paar Stiefel rab."

In the general introduction the e of the life and times of Lucian, and g account of his Greek style. It is fortunate that the editor's own style of others of our American cousins, is inclined to be florid. This book is al with good notes at the foot of the pag

[1] College Series of Greek Authors: "Selections from the Septuagint according to the Text of Swete." Edited by F. C. Conybeare and St. George Stock. vi. + 314 pp.—"Selections from Lucian." Edited by F. G. Atkinson. xliii. + 266 pp. (Ginn.) 6s. each.

BOOKS FOR THE DRAWING I

"OF the various subjects taught probably none have undergc changes in the methods c and in the character of the courses than drawing."

If any justification be needed for statement, with which Mr. I. H. M faces his "Complete Drawing Cours be found in the book itself. A con the dog-eared drawing-cards which v round indiscriminately, lesson after les elementary schools of five-and-twent years ago, with the scheme of work s drawn up and systematised by Mr. M show most convincingly that the chang only been great, but vastly for the b present volume, forming Part I. of " Complete Drawing Course," is intend dren up to eight or nine years of age. illustrated, attractive in style, and, in o should immediately find a place on t every infant and junior school mist course includes all the various phases taught in such schools, and, under th of free drawing (free-hand and free-arn in mass with chalk or crayon, brusl ruler work, flat tinting, pattern-ma memory work, the author has arranged hensive series of examples, full of v interest. He has prefaced each series

[1] "Longmans' Complete Drawing Course." Part I., Juniors. By I. H. Morris. 22 pp. and 55 plates. (Longr "Blackboard and Free Arm Drawing." By Herber 127 pp. (Blackie.) 4s. 6d. net.
"A Drawing Scheme for Country Schools." By Alber 52 pp. (Pitman.) 2s. 6d.
"Paper Sloyd for Primary Grades." By Ednah A Introduction by Paul H. Hanus). 55 pp. (Ginn.) 3s. 6d.

orward instructions as to treatment, and y his hints and warnings, that he has -hand experience of the difficulties and iat beset the teacher of these subjects.

H. Stephens has issued his book with a desire to stimulate the study and prac- ackboard drawing among teachers. He the importance of the blackboard sketch to description, and to the interest shown holars during the evolution of the sketch rest that has a high educational value, rawing and its associated facts are im- ipon the pupils' minds. Mr. Stephens umber of practical hints as to methods, sixty pages of illustrations dealing with odels, common objects, animals, birds, ers, fruit, shipping, armour, and so of which are eminently suitable for d treatment. They are well reproduced, igh marred by occasional faulty draw- dmirably arranged to form a systematic practice. At this stage, however, Mr. appears to have been carried away by siasm for his subject, and to have over- e fact that his medium has its limita- hite chalk on a blackboard, however for diagrams and for objects repre- outline only, is perhaps hardly suitable rate architectural detail, in perspective and shade, such as that involved in some er drawings. Assuming that the draw- be done *during* the lesson (as it invari- ld be), we fear the time occupied would rable, and we can imagine a class grow- e during the process, however much of g-sketch artist the teacher may be. If, the drawing is to be prepared before- n it would be much more effective and y true if done, say, on smooth cartoon th thick, soft charcoal, or lithographic he free-hand copy examples given are lace, and Mr. Stephens's suggestion better to use too many than too few on-lines is scarcely in sympathy with of modern methods of teaching.

E. D. Lowden's book strikes us as thodox to the verge of dulness, and to dispel most effectively any en- for art that may lurk in the breast icher. Our sympathies go out at once or youngsters of Standards III. and IV. be expected to wade through the mazes ctive theory contained on Plates X. and st for the teacher to whom may fall the iloting them we have a feeling of pro- , especially if, as Mr. Lowden assumes face, he or she be possessed of "only lity for drawing." The advisability of children of Standards I. and II. to use s" and stumping-chalk as a medium of is open to doubt; but that their initia- he mysteries of this process should con- *ninimum* of twenty minutes being spent ping" a four-inch square, with the sole getting it *flat*, is surely a great mistake.

In "Paper Sloyd," Miss Rich has written a most interesting treatise on this valuable form of manual training, followed by diagrams of some seventy models, carefully dimensioned, and with explicit information as to materials, equipment, and construction. They are arranged to form courses for first, second, and third years' work. An important and welcome feature is the inclusion at the beginning of each course of photographs of the completed models, while at the end of the book are samples of papers suitable for making the models. It is a book which should be in the hands of every person interested in the education and welfare of our rising generation.

THE INSPECTION OF SECONDARY SCHOOLS.[1]

By the Rev. Arthur J. Cooper, LL.D., M.A., B.Sc.
Headmaster of Brewood School, Staffs.

The very word "inspection" has a disquieting ring about it. We secondary-school masters, however much we may try to disguise the fact, do not like it. We may endeavour to persuade ourselves that we are ready to welcome it; we may even suppress our natural antipathy to it, but, notwithstanding, that antipathy is there, and deep rooted, too. Why? The answer is not far to seek. Because, as secondary-school boys—I use the term in its usual sense—we have been brought up under freedom. In our own school-life we have seen the varying influence of the individual master, differing in different forms, and have profited by it. We feel—in consequence of our past experience—that in the ultimate analysis inspection makes for a dead-level of mediocrity.

The ghosts of Arnold and of Thring, whose lives we have all pondered over (or ought to have done), rise up before us and ask, in unmistakable terms, whether inspection would have appealed to them. Could they have brooked interference with their ideals as they were working them out, and would such interference have proved beneficial to them? The answer comes, like an arrow speeding straight for its mark, to the hearts of each of us, that they could not. Yet they were schoolmasters, and such schoolmasters as most of us, even with our modern training, can never hope to be. They were born to rule, and their innate power asserted itself for the good of the nation in accordance with—as I believe—the will of God, and in such a way that they would have suffered persecution—and intense persecution, too—had they been subjected to the idiosyncrasies of inspectors.

But I am perhaps going too far. I must qualify. I should say the idiosyncrasies of inspectors such as we have had in the past, and to a less degree of those whom we have at present.

I thankfully acknowledge that the inspectors of to-day are more fitted for the work of inspection of a secondary school than those of fifteen or twenty years ago. Why? Because, and solely because, they are capable of taking a wider view of the situation. They are men of greater possibilities, but they have not yet learnt their business. I speak generally, and am cognisant that there are a few exceptions to the generalisation. I also speak sympathe-

[1] A paper read before the Association of Headmasters of Endowed Schools in the Midlands, March 3rd, 1906.

tically. I feel that the present inspectors are doing their best, and that their efforts will be crowned with success. But it is most difficult to realise the right point of view which should be taken—the opposite is much easier—and the realisation can only be arrived at, as all truths are arrived at, by the experience gained from mistakes. True inspection involves the power to take a wide general view of the purpose of a school, and of the means used to effect that purpose. Time and experience alone can show how this estimate can best be made.

The inspectors of to-day are still specialists, but, instead of being specialists on the scientific side, they are specialists on the humanitarian. This fact—I speak as a man with some pretence to scientific training—gives us much to be thankful for. The reason is obvious. The present-day inspectors are potentially capable of being true inspectors of secondary schools, while the scientifically trained were not; although they were *par excellence* fitted for the supervision of our technical schools. Let me explain more fully. The scientifically trained inspector looked for science, and science only. He was too biassed in that direction. Well qualified, and even brilliant in his own department, he came upon the scene with the express purpose of pressing science to the front, even to the detriment of other departments of knowledge. Literature, either classical or modern, was of little moment. He was *impatient* of scientific training as the one salvation for our schools. I need only remind you of the old regulations for organised science schools to establish my point. But the present inspector, while for the nonce he rides the literary hobby-horse as hard as his predecessor did the scientific, recognises that, although his own side of the question is very dear to him, there *is* the other side. Although he has not yet arrived at the conclusion that school-life is *many-sided*, and that *all sides are necessary* for completeness, yet he is capable of seeing that such is the case.

The consequence is that, in the end, we shall get the balance adjusted and the secondary school made what it ought to be—the efficient training-ground of the future citizens of this world-wide Empire.

But I say "in the end." We have not at present arrived at that ideal. The inspectors have not arrived at that state of salvation.

I have heard from my colleagues in the scholastic world of a goodly number of reports on "full inspections," and I have carefully noted where the praise and the blame have rested.

But never once—and I say it with the deepest regret—have I heard of any *adequate* remarks touching the character-development which is taking place in the school reported on.

To me, this is vital. It is where the great distinction between the elementary and the secondary school lies. Character-formation must be pre-eminent in the secondary school, and all must minister to that end. The secondary-school master is the character physician.

Do not let me be misunderstood. Character-training is important, too, in the elementary school, but it is not so pressing. The pressing need there is the rudiments of education—reading, writing, and arithmetic. Character-development comes later, after the boys leave school. It depends largely upon the environment in which the child is placed after he has been removed from the elementary school, and it is incumbent upon those with whom he comes in contact at that period of his life to provide a healthy environment for him.

On making this statement to one who had been a master in an elementary school, and also, at the san officer of the Church Lads' Brigade, I was find that my view was entirely borne out perience. He said he was astonished to find most unpromising characters of the elementary which he was connected turn out well when br the influence of the Church Lads' Brigade. agreed that the difference of deportment was due to the difference of age at which the infl brought to bear on the individual. In the elementary-school boy, the best years for *tru* formation are spent away from school; not s in the secondary school. Our upper boys a just when we can mould them for good or boy's character cannot be formed by the time h or fourteen, but if it is not formed when he i eighteen, or nineteen (the age varies with the then it will be through much tribulation—and tribulation—that it will be formed afterwards.'

I do not say that it will not be formed afte but I do say that we can, if we will, save mu to our older pupils by our watchfulness while th us in our secondary schools.

I should like to dwell longer on this point, hardly say that I am not writing an exhaustiv have not tried to do so. I wish to evoke criti call forth ideas which may help me (and I hope headmasters) in points which have proved diffi simply opening a discussion which I trust wi of valuable suggestions for the guidance of eac in shaping the precious lives of those placed care. This being the case, I must pass on what, from my point of view, is the functio spector of a secondary school.

First and foremost, his powers of interferen curriculum should be—not barred, but certai He can decide whether a curriculum is generally or too wide, but it is open to criticism whethe ference should go beyond this. The headm knows his district, who knows his boys, is the of the rest. From the nature of the case th cannot make himself acquainted with the need ticular school as efficiently as the headmaster not in touch with the powers that rule in the vicinity or with the parents, while the headm is fulfilling his duty, is.

Moreover, the inspector does not know the s of the individuals in the school which he is insp ought, therefore, to be very chary of blaming master—much less of penalising him by reducin —when he allows a boy to drop a certain subj to take up for the time being some other whic master feels convinced is of more benefit to hi present the attitude of the inspector is in a con tion. One's thoughts cannot but recur to the the Board of Education Bill of 1899 was under It was then generally believed—and not witho that the secondary-school system of this coun such powerful and far-reaching influence that possible for it to be transformed into somethi against its will. But the secondary-school h since that time so widened—chiefly by the g new kind of secondary school—that the presen inspection approaches perilously near to effectin formation which at that time appeared so unde

[1] This remark may need some qualification. The chara not formed completely in a lifetime, but the *character-bias* c

st of us, would even now be unwelcome, and sly modify the legitimate influence of our

that the inspector is not to blame, that the laid down hard and fast rules which must with if the grant is to be paid. If so—and ng suspicion that this is the case—the rules ade more elastic. It cannot be too strongly the headmaster must be paramount, and that be relied upon he should be removed. This ardship in specific cases, but it is absolutely our secondary schools are to carry out the must of necessity devolve upon them and if lo the work which the nation rightly looks form. The headmaster alone—or, in the case ols, the headmaster after consultation with —should prescribe the curriculum for each ess there are strong and manifest reasons to the inspector should fall in with his ruling. can see, it is only by such a system that the nd special characteristics of each school can . The conscientious headmaster may be scribe what is best for his boys, and will be decide in each particular case.

estion arises: Does not this make the head- spector? My answer is that it does, and s I have already said, the headmaster should in his school, and I add that he should be t inspector of his colleagues; while the nspector should more particularly be the in- headmaster, who is presumed to shape the by his staff. The inspector should be the opher, and friend of the headmaster, and the experience which he gains from visiting of schools to the help of each individual ruggling for the light and striving to do what is charges. He should focus the divergent ltiplicity of experiences in such a way that rned to account in schools of a very variable so produce a distinct image of unity which all schools, even though they carry out—and ry out—very different objects. There is a hould permeate all schools, even though that ified by the necessity for specific types in ities. The object is the same throughout, but ttaining that object are of necessity different. prudent headmaster should discuss school th his colleagues, so the inspector should *his* colleague, the headmaster, points which remedying. But the inspector's suggestions ated as such, and not as final orders. From view of the particular school, the inspector g and the headmaster right. This is more he case than the contrary. Hence the head- —to quote a phrase which occurs in most somewhat different connection—"be given ity of expressing his views," and the in- be open to conviction.

so, there would be far less discontent with inspection than is at present the case. So been able to gather, the present tendency is tor to usurp the function of the headmaster, contrary to the spirit of the regulations laid Board of Education for the conduct of in- secondary schools. In Appendix A of those find the following statement:—

ational inspection will deal with all the subjects comprised in the curriculum of the school, but not by way of systematic examination, either written or oral."

These provisions define the functions of the inspector very clearly, and I have nothing to quarrel with in the province thus assigned to him. But do those who carry out the inspection adhere to these provisions? I think not. In all the inspections of which I have heard, I find that there is very definite—if not written—oral examination of the pupils. Nay, more, the inspectors feel aggrieved if the teaching has not been in accordance with certain curricula which have been issued under the title of "suggestions" for the teaching of certain subjects, which curricula bid fair, in the near future, to become definite codes on adherence to which the efficiency of a school is to be judged.

This means the surrender of the teacher's individuality—a vital point in secondary schools—and the reduction of all schools—I say it advisedly—to a dead-level of mediocrity.

Permit me, before going further, to crystallise from my point of view the functions of the inspector of a secondary school, not in any dogmatic spirit, but with the view of arriving at the true standpoint which headmasters feel the inspector should take in criticising their schools.

(1) He must realise that he is the equal and helpmate of the headmaster. He must not be a pedestal-loving official permeated with a desire for official red tape. If his position of necessity involves this, the conditions under which he works must be altered.

(2) He should point out to the headmaster the features of the school which in his opinion are open to criticism, but he should be prepared to listen to the views of the headmaster, and, unless strong reasons appear to the contrary, to fall in with those views. In other words, he must be sympathetic, and give the headmaster credit for doing his best in the conditions under which he works.

(3) He must grasp the complexity of the problem of secondary education, and must allow for the individual needs of each pupil as set forth by the headmaster. This involves absolute confidence and mutual trust between the two. The inspector cannot be cognisant of these needs, and he must therefore be prepared to come to the aid of him who can, for the inspector's true function is that of helpmate, and not of adverse critic.

(4) He must inspect, and not examine. Inspection and examination are two different things, and must be kept apart. The examination of the school by an examiner appointed by the governors, but otherwise unconnected with the school, must be consistently adhered to. Inspection touches upon matters which the examination cannot do, and *vice versâ*. Both are necessary. Neither alone is complete. They are complementary. Examination discovers the tangible results of the teaching upon individuals, while inspection should test the ethical results of the methods used—their bearing on character-formation.

(5) Above all, the inspector must note the tone of the school, and determine, as far as possible, whether it is efficiently carrying out its ideals. From its very nature it is impossible for examination to accomplish this, but well-directed inspection can.

You will gather two things from these remarks. First, that the inspector is unable to enter upon his work fully fledged. He has to be *made*. It would therefore be prudent for every newly-appointed inspector to serve an apprenticeship under an experienced colleague before embarking unaccompanied upon the complicated business of inspecting a secondary school. Only in this way can

efficient inspection be assured and a continuity of policy arrived at.

Secondly, it follows from what I have said that the inspector must have wide discretionary power, and must not be bound down by hard and fast rules imposed upon him by his chiefs. Rules of this kind will hamper him in his desire to fall in with what appears to him reasonable when laid before him by the headmaster.

May I crave your indulgence for a few moments longer while I touch upon the question of inspectors' reports? At present, the Oxford and Cambridge Board, and, I believe, the Education Department also, make the stipulation that the report is not to be published except *in toto*. While recognising the danger of permitting the publication of isolated sentences, or even of short extracts apart from the context, I cannot but feel that some modification in this respect is desirable. It is conceivable that the report as a whole is a most favourable one, but that in matters of small detail, which are easily remedied or open to criticism, it is adverse. Such small matters do not affect the general tone of the report, and yet, in the eyes of the layman or the unsympathetic, they are liable to be greatly overrated.

What objection can there be to the issue of a concise report in a few lines as to general efficiency for the purpose of publication? The detailed report, which deals with internal organisation, as apart from tone and general efficiency, should be published *in extenso* or not at all, and it should remain with the governors—after consultation with the headmaster—to decide whether or not such publication should be resorted to. I see no objection to such a course, which is practically carried out by the inspectors of our elementary schools.

In conclusion, I would ask you kindly to overlook any weakness in this paper, and can assure those who have patiently listened to me that I shall feel more than satisfied if I have contributed, even in the slightest degree, to the solution of the difficult question of the inspection of secondary schools.

NEW SCIENCE ROOMS AT CHELTENHAM GRAMMAR SCHOOL.

Early in 1904 the Gloucestershire County Council, recognising the urgent need there was for better accommodation in Cheltenham for instruction in science and art, placed at the disposal of the governors of the Cheltenham Grammar School a capital sum of £20,000, to be used in erecting a new School of Art and School of Science and Technology. A piece of land contiguous to the Grammar School, and quite close to the Girls' School, was secured, and on this has been erected an edifice worthy of the high position that Cheltenham holds as an educational centre. The building is now ready for occupation. The frontage measures 123 feet; the side has a length of 120 feet. The School of Science occupies the ground floor, and the School of Art the first floor, the rooms being arranged in the form of a quadrangle, with open area for light and air in the middle, round which run the corridors.

The rooms will be used not only by the pupils of the Grammar School and of the County High School for Girls, but also by the students of the School of Science and Technology and of the School of Art. In designing the fittings for the School of Science, Mr. H. H. Robjohns (director of modern instruction) has made an attempt to cater for the needs of the different kinds of students who will work in them.

Three large rooms are apportioned to pl lecture theatre, 35ft. × 28ft., elementary laborat 28ft., advanced laboratory, 37ft. 2in. × 24ft., glass doors into each other, as well as a 21ft. × 7ft., ingeniously contrived under the b chemistry lecture theatre.

In the physics lecture theatre, the le (14ft. × 3ft.), besides being wired for low-tens from accumulators and high-tension current electric lighting mains, and having the usu water supply, mercury tray, suspension rail, arrangement (3ft. × 2ft.) whereby apparatus ments in statical electricity may be kept hot for of time. The lecture-room rises in tiers, so ar every person has a view of the demonstration is furnished with dual desks. At the back is a an optical lantern, using electric light as illum wall at the back of the lecture table is furnis ground-glass blackboard running along its en The windows of this room, and of the chemi theatre room, are fitted with dark blinds to lantern to be used in the daytime.

The elementary physics laboratory, like the chemistry laboratory, is planned so as to enal be carried on by a class of twenty-five. It has double working benches (12ft. × 5ft.) running room, with teacher's platform, demonstra (9ft. × 2ft. 3in.), and blackboard at the side, a view of all parts of the room. Two of th are provided with drawers and cupboards for of apparatus, and one is fitted with suspensi experiments with pendulums, pulleys, &c. A usual gas fittings, but no water. Against th three large sinks, two provided with draining suspension rail is attached to an end wall whicl with wood in order to allow drawing paper to to it. Between the windows are balance sh cupboards underneath, while the room also apparatus cupboard and shelves for chemica room, as in the advanced laboratory, and above table in the theatre, there are hooks fixed in to enable experiments to be performed with p a good length.

The advanced physics laboratory is fitted work in electricity, magnetism, heat, mechan the centre is a long slate slab (12ft. × 4ft.), glazed brick piers built up from the concret experiments with magnetic instruments. A s 2ft. 9in.) similarly built up against the north the balance shelf. One corner is arranged shelves and dark curtains for work with mir meters (Dr. Sumpner's pattern). There are benches (12ft. × 5ft.) in the room, the one wired lysis work, and fitted with suspension rail f mechanics, the other with trough and conden heat experiments. Both of these benches cont and cupboards of varying sizes, so as to be holding all sorts of apparatus. There are two room, in addition to the water supply on benches.

The dark room is provided with sink, drawers, and shelves, &c., for photography, wi runs the full length of the room for optical w a double door to give admission to the ro entrance of light, and is perfectly ventilated The controls for the electric light are so place will be no groping for them in the dark.

The chemistry department similarly consis

ns, the lecture theatre (40ft. × 35ft.), elementary (42ft. 10in. × 29ft.), and advanced laboratory t. 8in.), with balance room (20ft. 8in. × 8ft.) he elementary and advanced laboratories, and n (13ft. 6in. × 9ft. 2in.) and preparation room 2in.) between the elementary laboratory and atre. These rooms open into each other by glass that access is obtained from one to the next t of the corridors.

mistry lecture theatre rises in tiers to the back ne way as the physics theatre, and like it is with dual desks.

ture table (14ft. × 3ft.) is fitted with the usual and drawers, with gas jets and condenser controlled from the front, and with a lead sink and an earthenware sink at the other, both with s and covers. In the top is a mercury tray 6in.). The table is fitted with two of Messrs. atent hoods for carrying away fumes, connected all the s, hoods, es to an xhauster in the n, which noxious he chim- for that

back of table is sliding (12ft. × a fume ning also prepar- n) with poised such a 6in. × as to ge pieces us to be easily, led with water ide con- nd also all sink.

The New Chemical Laboratory at Cheltenham Grammar School.

paration room contains a bench (9ft. × 2ft.) to atus prepared for lectures, as well as a washing- fitted with a large and deep sink (2ft. 8in. × 2ft. deep), with draining board, draining rack, f Fletcher's patent instantaneous water-heaters. ng board folds over in an ingenious way, making the sink, and the bench is then transformed dinary working bench.

nentary chemistry laboratory takes a class of , working at five single benches (18ft. × 2ft. 6in.), the demonstration table at the end of the room. ting place has a separate sink with swan-neck on which is fitted a filtering ring. The sink n not in use is stored in one of the two cup- ich each working place contains, as well as two The gas jets have front controls. The cup- right under the sinks, for, as the benches are drains, water and gas pipes, run at the back ch, access to them being easily obtained at any time by removing one or more of the sections of which the back is composed. The same arrangement, affording ready access to drains and pipes, is used in the case of the lecture tables.

The benches, being designed for elementary work only, have no shelves, and consequently the teacher from his platform has a view of all the students' work, as the students have of all that is being done on the demonstration table; a tiled strip affords place for one row of bottles standing on the top of the bench.

On one side of the teacher's platform stands an apparatus cupboard, flanked by a set of reagent shelves on the other. At the other end of the room, and adjacent to the advanced laboratory, are shelves for stock bottles of common reagents, and a set of steam ovens with still, whereby the waste steam, after heating the ovens, is condensed, to be used as distilled water. A stack of six fume cupboards (each 3ft. × 2ft. 3in.) runs along one side wall; these have tiled backs and white glazed earthenware bases; they are provided with water and waste (as well as gas, worked by outside controls), and can thus be kept thoroughly clean. Against this wall also, and enclosed in a fume closet, is a "hot plate" (4ft. × 2ft.) for evaporations, on which the dishes of a whole class can find a place, while, by an ingenious arrangement, any particular dish can be at once picked out from the rest. Between the windows on the opposite side of the room are balance shelves and cupboards, and in a convenient corner a large sink for washing up. In this room, as in all the science rooms, care has been taken to ensure that the position of the electric lights is such as to give the maximum amount of light on the work with the minimum amount of glare in the students' eyes; while waste of current is prevented by a plentiful supply of controls, thus enabling just those lights to be in use that are really wanted, and no other.

In the balance room is a cupboard for storage of reference books, expensive chemicals, &c.; the balances stand on slate slabs resting on white glazed bricks built up from the concrete floor.

The advanced chemistry laboratory will take eighteen students, working at three double benches (12ft. × 4ft. 9in.) placed across the room. As in the elementary laboratory, the gas jets are controlled from the front of the bench. Along the middle of each bench runs a set of skeleton shelves, affording ample room for reagent bottles; the top being flat and wide, affords a resting place for flasks, large bottles of standard solutions, &c. These benches, in

common with all the working benches in the various rooms, are recessed at the bottom to prevent students' toes coming in contact with the panelling. Each working place contains two cupboards and two drawers, except the place in the middle, where the two single cupboards are replaced by a double cupboard with return shelves. Ample water supply is provided, with connections for condensers as well as jets for ordinary use; wastes for water from condensers also exist. The benches have electric light standards, and are wired for low-tension current for quantitative work in electrolysis. At the end remote from the balance room are the fume closets, three in number, the middle one 5ft. 6in. long and the side ones 3ft., all being 2ft. 6in. wide. The bases of these cupboards are of Yorkshire flag. One cupboard is provided with water and sink, all with gas; in each case the controls are outside the closets.

At the opposite end of the room is the blowpipe and combustion shelf, with hood above, connected with the fume extraction flues; near by is situated one of Brown's improved water suction and blast apparatus, delivering compressed air to the blowpipe and exhausting from a series of taps placed at convenient distances along a shelf, to which flasks can easily be attached for accelerating filtering operations.

Reagent shelves, apparatus cupboard, and glass tubing rack complete the equipment of this room.

A CONTRIBUTION TO THE GEOGRAPHY OF THE SPANISH ARMADA.[1]

THERE are points at which history and geography meet, and where history provides material that geography alone can weave into shape. In the case of the destruction of the Spanish Armada by Atlantic seas, chiefly on the west coast of Ireland, the event was of such supreme importance in itself, and occupies such a prominent place in history and in the imagination of the British people, that I may be pardoned if I assume that every detail that can be found out as to the wrecks of the ships is worthy of record. Since the State papers of England, Ireland, Spain, Venice, and the Papal States of the period of Queen Elizabeth have been published, it has been found possible to get at the very sources of the history of the enterprises and intrigues of that brilliant time.

In 1890 and 1891 it became my duty to make a special Fishery Survey of the west coast of Ireland. I had to navigate all harbours, channels, and creeks on that coast, and while primarily interested in the present condition of the inhabitants, the traditions of the past that still linger aroused my interest in the history of the places we frequented, and to which I have many times returned in succeeding years.

There proved to be many interesting events associated with those wild western bays, but none probably of so much general interest as the wrecks of the Armada. Twenty-three ships are known to have been wrecked on the Irish coast, while others reached safe anchorages on that coast, and were among those that ultimately returned to Spain

Before taking up the story of these wrecks, we must consider what previous knowledge the Spaniards had of navigation on the Irish coast. Spanish intercourse with Ireland, of which so many traces still remain, went on for centuries prior to the days of Elizabeth, and, immediately before the sailing of the . Spaniards on the Irish coast were not only r the crews of the six hundred Spanish fishi which Sir Humphrey Gilbert made a special Queen, but also in permanent fishing establish coast.

Sir Francis Drake drew up a complete sch turing these trading ships and fishing boats, that the fishing vessels were each of abc burthen. Owing to the prevailing south- north-westerly winds, the run to and fro b and the west of Ireland was a comparatively for vessels that could wait a little for a fai the west of Ireland then seemed to be for fish banks of Newfoundland have since become.

When the sun set on Friday, August 3r 1588, the Duke of Medina-Sidonia saw the British fleet. They had escorted him unti abreast of the Firth of Forth, to make sure not attempt a landing in Scotland.

As the fleet passed the Orkneys we may the number of ships composing it. This has b stated as 80 or 90. Both these figures are, I the mark. The Armada had left Spain 130 think Prof. Laughton's statement may be acce number of vessels of all sorts, including despat zabras, that actually entered the English Cha more than 120, of which seven large shi *Salvador*, *Rosario*, *Santa Anna*, *San Lorenzo*, *San Filipe*, and *San Mateo*, were lost during fighting. The *San Juan de Sicilia* went down Sea. The *Gran Grifon*, after taking on boa of the crew of the *Barque of Hamburg*, whicl in the Atlantic, put back and was lost on Fa *Falco Blanco* (mayor) was captured when t back through the Channel. The balance of t was mostly made up of small craft, one of w is known to have gone off to communicate wi of Parma, and did not return.

Taking the number of ships that passed the 90, and allowing that 57 of them got back to I think is nearly correct, the result may l follows:—2 ships lost on Scottish coast, the Sound of Mull (wreck now being explored), called the *San Juan*, on the outer Hebrides coast of Ireland; 2 blown by storm into Channel; 57 returned to Spain; 5 unac Result, 90.

Of the five unaccounted for, some were prol the out isles of Scotland and of Ireland, whil have gone down at sea.

Of the ships that passed westwards into there was the Capitaña General, *San Marti* Duke of Medina-Sidonia on board; and the S which went Martinez de Recalde, the Adn Armada.

The Levantine squadron was represented by *zona*, a ship of 1,200 tons, and the largest in t by others, including *La Trinidad Valencera* a *Encoronada*. The last ship, specially well-foun manded by Don Alonso de Leyva, and with hin of the noble youths who had come to be pr invasion of England. On this ship great observed, and on the way to the Channel b been given at which the duke and other hig the fleet were present. The *Rata*, too, was hardest of fighters, and was in the thick of e

[1] Abridged from a paper on "The Wrecks of the Spanish Armada on the Coast of Ireland," read before the Royal Geographical Society on February 12, by the Rev. Wm. Spotswood Green, M.A., Chief Inspector of Irish *Fisheries*.

hile her commander, in the opinion of many, ve been the leader of the Armada.

galleasses, the ships with oars worked by hun- slaves, only two were present, the *Gerona* and *ga*. The remainder of the fleet was made up of transports, and the smaller craft known as and zabras.

ships were now short of water and provisions, me were better off than others. Numbers of men , and the small relief that was gained at Scallo- from the fishing boats captured, did little to alter able state of the crews.

ie wind north-east, they passed the Orkneys on nd 10th, and, according to the log of the *Zuñiga*,

ome of the cluding the *in*, ran 400 three days, hted the Ireland; the wind the south, the whole wards. On 23rd and re was a rm, which the ships, ugust 26th nd them- 55° N. lat. he Armada d back to N., off a moment- rence took board the *in* as to t would be account of hing state crews, to the Irish to follow course into ntic. Cal- orts that, ego Flores the former e duke was ide to keep westward. however, venty-seven d already from the duke; in desperate straits for fresh d with the crews dying by scores, he arrived at decision of making for the Irish coast.

those ships that at first accompanied Recalde, t had suffered special damage in the fighting, and eeward, joined him later on, all hoping to reach in water, and do some repairs. The ships that wed Recalde were again scattered in a south- gale on September 2nd, and, according to their o windward, they all dropped in upon the Irish different points about the same time, between 1st and 5th.

st imagine this group of vessels approaching the Irish coast from the north-north-west, and forced inshore. Those most to windward would reach Kerry, others Clare, Galway, or Mayo; while the leeward ships, failing to weather the north-west corner of Mayo, would fall away into Donegal Bay. In this order they arrived.

Some ships that sighted Ireland at this time tacked to north-west and gained an offing before the wind veered, and thus escaped; among these was Calderon's hulk *San Salvador*.

Martinez de Recalde could not personally take much part in the direction of affairs, for he was very ill; according to the evidence of one of the prisoners examined at Dingle, he took to his bed after the battle of Gravelines, and never left it until three days before reaching the coast of Kerry. Experienced old sailor that he was, he no doubt pulled himself together when the landfall had to be made, and thus brought his ship, with two despatch vessels, on September 5th, safely to anchor under the lee of the Great Blasket Island. Another large ship, which had sighted the Blaskets on September 1st, and had been standing off and on, met him at sea and followed him in in safety. This ship was the vice-flagship of the Castilian squadron, and must have been the *San Juan Bautista*. During the gale of the 11th, the *Nuestra Señora de la Rosa*, in attempting to enter, struck a rock, but ran on, firing guns for help. She anchored near to Recalde, but suddenly went down. Following the *N. S. de la Rosa* came the *San Juan* of Ragusa, her mainmast gone and her sails in tatters. She also anchored near to Recalde and sank, but not before the crew and some pieces of artillery were saved. Recalde, in the *San Juan*, and the surviving ships with him, remained in the Blasket sound for thirteen days, and then passed on to Spain.

On or about the day that Recalde entered the Blasket sound, four large ships and three despatch boats entered the Shannon, and, sailing up, anchored safely in Scattery Roads. While there the Spaniards burnt the *St. Marcos*, a great galleon that had suffered much in the fighting, and was no longer seaworthy. The remaining ships left the Shannon on the 11th, the wind then being north-east, and possibly were among those that got back to Spain.

A great number, probably twenty ships, of the Armada were sighted off the Clare coast: four anchored in the open sea off Loop Head; two of these were probably those wrecked in Mal Bay, while the others, as well as two ships which were seen at anchor for three days outside Arran Islands, may have left the coast in safety.

The *Falco Blanco* (midiano) was lost somewhere about Roundstone, in Connemara—that is, in Tige ne Boulie O'Flahertie's country. Unlike Clare, this country was practically outside English control, and the survivors of this wreck, including Don Luis de Cordova, were at first cared for by the O'Flaherties, who, sailors themselves and knowing something of the outside world, were inclined to protect the survivors. Threats, however, induced them to deliver up the prisoners, and, with the exception of Don Luis, a few officers, and two others, who were hidden away by the townspeople, they were all beheaded or hanged in Galway.

Passing north of Galway to Clew Bay and Mayo, we meet with definite information of the loss of the great ship *El Gran Grin*, with Don Pedro de Mendoza on board; striking the rocks of Clare Island, she went down. For some days those who had escaped safe to land, numbering one hundred, hoping that their lives at least would be spared, and hearing that other Spaniards had landed to the northward, asked that they might be sent in boats to the mainland; but Dowdarra O'Mailie, who was chief of the island, and wished to stand well with the English, put them all, including Don Pedro, to the sword.

One of the most interesting places in connection with the Armada is Blacksod Bay. In the Irish State Papers we find that a great ship came into the bay on September 6th or 7th, and anchored in the middle of the bay between Torane and Ballycroy. This ship was no other than *La Rata Encoronada*, with Don Alonso de Leyva and his young nobles on board.

Mr. Froude gives a faithful account of the wreck of this ship, but he gets into confusion as to the subsequent events. Soon after the *Rata* anchored off Ballycroy, which was an exposed anchorage, another great ship, the *Duquesa Santa Anna*, sailed in, and, going up the bay, was reported to be at "Pollilly, off Torane." This is the best anchorage in Blacksod, and would nowadays be described as "Elly Bay, off Tirawn." The *Rata* dragged her anchor, and was seen stranded on September 11th. De Leyva and his company landed and proceeded to fortify themselves in an old castle close by. Landing all the treasures that they could save, and their armour, they burnt the wreck. The old ruined castle of Doona marks the site with accuracy.

De Leyva did not stop at Doona, but crossed the bay with his company, and, joining the people of the *Santa Anna*, they proceeded to fortify themselves at the ruined castle of Tirawn, but subsequently went on board again and put to sea.

These events being more connected with history than geography, I must thus dismiss them and follow the fortunes of the *Santa Anna*, as I think I have found the exact site of her destruction. Failing to get towards Spain, owing to the wind on the 15th having backed to the southward for another cyclone, she kept away northward for Scotland, but is reported to have been wrecked in Loughros More Bay, in Donegal. De Leyva and the two ships' companies, making about 800 all told, entrenched themselves on shore close to the wreck for nine days, and then made their way overland to Killybegs. Finding there the galleass *Gerona* in a very battered state, they repaired her, mending her rudder that was broken; and on October 16th put to sea for Scotland with 1,300 men on board. She rounded Ireland's north point in safety, but, giving way, she was driven at midnight on to "of Bunbois," near the Giant's Causeway, and except five sailors and soldiers, who managed t shore, and were kindly treated by the McDonn luce Castle.

The site of the great catastrophe that closed of Don Alonso de Leyva and his gallant com particular interest. Tradition connects the wr *Gerona* with the little bay called Port na Spa eastward of the Giant's Causeway, but those w from personal knowledge said she was wrec "Rock of Bunbois," that is, in English, the ro *Foot*, which is a little to the westward of the and the Lord Deputy reported, December 31st, ' fair pieces of brass lie among the rocks of Bunb Don Alonso was drowned, and can be recovered all things into account, I incline to the conclusi remains of the *Gerona* lie off the Bush River Ballintree.

Failure to weather Eagle Island threw no les ships, including a large ship lost in Broadha direction of Donegal Bay, and they were embayed. Passing the ship wrecked at Inver, o on the coast of Tirawley, possibly in Ballycastle Bay; and the survivors from this wreck, incl ecclesiastics and other persons of note, were c William Bourke, of Ardnaree, near Ballina, a were handed over to George Bingham, brot Governor of Connaught, who executed them.

Farther east, three great ships, including the of the squadron of Castille, driven further to lee as they said, "failing to weather Cape Clear case it was Eagle Island), anchored off Streeda between Sligo and Ballyshannon.

History in this case, as contained in Captai letter, first published by Captain Duro, and of wh translations have been made, furnishes ample discussing questions of topography. The sh Levant Squadron, probably the *Labia*, in whi Cueller then was, and her two companions, ashore and wrecked, with the loss by dr massacre when they reached the shore, of more men. Considering the direction of the wind circumstances, the smooth strand to the eastwa haven was, I believe, the exact spot where C washed ashore.

The Lord-Deputy Fitzwilliam visited these st the wrecks. Fenton had previously reported and great masses of wreckage. The bodies were by nature or by human agency, buried in the sa nowadays, when storms shift the dunes, q human bones are brought to light. This is to the local inhabitants.

Mr. Allingham, of Ballyshannon, has don elucidate Captain Cueller's wanderings around tains, and to McClancey's castle on Lough I am satisfied that, with his aid, I have follow track until, nine months after the wreck, he probably from Dunseverick, in Antrim, to Scotl

On September 5th, three ships were seen fro coast making for Killybegs. One of these, t *Gerona*, already referred to, got safely in, one little outside the entrance, the third appears t ashore in the harbour, and, breaking up, the wr used by De Leyva and his people in repairing t When De Leyva therefore reached Killybegs, more than 1,500 Spaniards in McSweeney ne

re him, but when pressed to assist the chief-
se parts in making war on the English, he
the levying of war in Ireland was not included
ctions he had received from King Philip.
ship that was certainly lost in Ireland was
Valencera, a great Venetian ship of 1,100
Don Alonso de Luzon, Ponce de Leon, and
ned officers on board. In the gale of the 2nd
ung a leak that could not be kept under, and,
hrough Inishtrahull Sound, ran up along the
ishowen, and anchored in Glenagivney Bay
goe Bay on the charts). It took two days to
w and some men from the *Bark of Hamburg*
board, numbering in all 600 men.
Valencera sank and became a wreck, Don
his company marched eighteen miles inland to
Aillagh), O'Dohertie's town, where they sur-
the English, after many had been shot down.
castle of Ellagh, close by, on the north side of
between Derry and Buncrana, still marks the
urrender.
e whole time that the Armada was beating the
eat, the weather was exceptionally stormy;
a succession of cyclones, those of August 23rd
eptember 2nd and 10th, being the most de-
The wind was oftener southerly than in any
. It varied chiefly from south to south-west,
of this some of the ships made their way to
or at least were able to maintain a south-
ly course, which proves that they were able
essfully within six or seven points of the wind.
ably had no weatherly qualities at all, and only
hen they got the wind abaft the beam.

ORY AND CURRENT EVENTS.

ring the course of the war in South Africa, we
nes asked for our opinion on the matter, it was
say we would wait for thirty years before we
an answer. Such is the advantage of watching
ad of having to decide on action one way or
news, as it arrives from the Transvaal, is
r caution. The war did no more than many
done in history. It gave a negative answer to
d solution. The Boers were not to have their
tary force. So, Cromwell decided, in sequence,
kingship, that Ireland, that Scotland was not
last voice in English politics. But the Restor-
60 found all the problems still unsolved. How
m have been finally solved since, who can say?
in South Africa, the sword has put aside one
hat is the settlement to be? Is one race to
inst the other? Are they to coalesce? What
relations between the various States of South
t between them, either divided or federated, and
country? Such is the history now being made
those of us who watch, it is interesting
y. To those who have to act, wisdom is neces-
nce shall our statesmen get it?

e Secretary was asked a question the other day
ive resisters." In reply he said, "I have no power
e in the proceedings for the enforcement of the
rates. The matter is one of legal process *not*
province of the Executive Government." What
ds in italics mean? We are always told that
ree parts of Government: the legislative, which
aws, the executive, which carries them out, and
the judicial, which—well, quite what the judicial part of the Government does never gets clearly stated. What Mr. Gladstone practically means is evident from the concluding phrase of his sentence, which ran "and not subject to interference under the prerogative of the Crown." But does not the incident reveal the traditional, but illogical, use we make of words? The "Executive Government," with capital letters, does not include the police or prison authorities, or the magistrates, who yet, whatever else they do, "carry out the laws."

THE Catholic Church of the Middle Ages was a universal society. As the peoples of Europe grew into a realisation of nationality, the various States came into conflict with its authority, and especially with its head, the Bishop of Rome. This is the explanation of the political side of the Reformation of the sixteenth century—a stage in the long conflict which existed before that period and has remained ever since. Such conflicts must needs be between *any* central government and local governments, each naturally striving for the exaltation of its own office. Modern examples are not lacking. Unions of "labour" against "capital" and unions of capital against labour show signs of becoming "international." The Salvation Army knows no distinction of country or State, and therefore has to reckon with these. And our latest news is that Chinese Christians are following the movement of China for the Chinese, by expressing their desire for freedom from the "foreign" societies which have converted them, and for an independent Chinese Christianity. We have heard the opinion expressed by one who ought to know, that India will never become Christian until a "heresy" arises there.

THE revolution in Russia is still in progress. The elections for the Duma are taking place, and we are waiting with eagerness the working of this new experiment. Whose instrument will the Duma be? Will it be like the mediæval English parliaments, called together for the monarch's purpose, and only incidentally and after long struggles coming to express the complaints of the people? or will it become the weapon of the more "advanced" parties, and take up the attitude of seventeenth-century English parliaments, that of suspicion of the Government and chronic hostility thereto? If the latter alternative prove true, will there be a civil war between monarch and Duma? and how would that end? Meanwhile we notice that according to the official programme there is to be a distinction similar to that between mediæval English ordinance and statute. The monarch may in the intervals of sitting legislate temporarily.

ITEMS OF INTEREST.

GENERAL.

THE Board of Education has just issued a revised edition (Form 123) of the circular—which appeared first in the autumn of 1904, and was dealt with fully in THE SCHOOL WORLD (Vol. VI., p. 382)—on the teaching of English language and literature in secondary schools. As to the texts prescribed for study in each of the four years of the suggested course of work, the revised circular says that texts taken from one author, or more than one, should be planned out for completion within each term, and each year's work should include both prose and verse. Equal thoroughness of treatment, the circular continues, need not, and indeed should not, be given to all portions alike of the text studied; discrimination should be exercised as to which portions should be dealt with in detail, and which should be handled more lightly. It is recommended that, so far as possible, the exercises connected with the text

and subject-matter should be arranged so as to arise naturally out of the text, or to be connected with it closely. The suggestions as to texts which may be studied during the four years' course have also been modified; teachers of English literature should therefore take an early opportunity of making themselves acquainted with the revised circular.

A CLAUSE has been inserted in the Education Bill now before Parliament which, if it becomes part of the forthcoming Act, will put an end to the Teachers' Register. A memorandum issued by the Board of Education details the steps which led to this decision. It has, the Board states, become clear that the existing regulations for registration fail to carry out the intention of Parliament, and that there is no prospect of so amending them as to comply with the directions of the Legislature. It cannot really be maintained that the recent proposals of the Consultative Committee for amending the regulations for registration would remove the obstacles to the success of the Register. The Board believes that suitable alterations in their own regulations and in schemes for secondary schools would do as much to encourage the training of teachers for secondary schools, in the absence of a register, as would be the case were any practicable scheme for registration super-added. While acknowledging the existence of some measure of grievance in the case of a certain number of individuals as the result of the abandonment of the Register, the Board is convinced that there is no alternative course which would result in the establishment of a satisfactory Register of Teachers, as required by the Act, without at the same time imposing even greater hardships on many persons.

THE annual conference of the National Union of Teachers was opened on Easter Monday at Scarborough. More than 2,000 delegates were present, representing 486 branches of the Union, and deputations attended from other associations of teachers in Scotland, Ireland, Belgium, Switzerland, and Holland. The president, Mr. T. P. Sykes, Council School, Great Horton, Bradford, delivered his address, in the course of which he dealt with the Education Bill. The financial aspects of the Bill were first discussed, and the education machinery set up by the Act of 1902 was then reviewed. The question of religious instruction in primary schools was handled temperately, and chiefly from the points of view of the school and the child. Speaking, towards the close of his able address, of the needs of individual children, Mr. Sykes said the classes are twice too large. The essential thing in teaching young children is to help each one separately and to pay attention to their varied needs, but against this obstacle of large classes the most skilful teacher cannot prevail. His skill has perforce to take a new form. He adapts his methods to the needs of the class, and excels in the lucid presentment of a subject to rows of listeners, rather than in stimulating intelligence. The result is that in training to think the primary schools are weak. The nation has not yet given the primary-school teachers their chance. Surround the teacher with reasonable conditions of toil, and he can no more help teaching than an artist can refrain from putting on his canvas the lights and shadows of a lovely landscape in the midst of which he finds himself. The greatest educational force a teacher can bring to bear upon his pupils is his own life constantly lived before them. In their eyes he, like father and mother, has solved the mysterious problem of existence—in many cases heaven only knows how inadequately. He has no doubts and worries, whilst the children have many. To the tea and plain sailing; it is the little children tainous difficulties before them. But in recollection of that calm, cheerful life li children in the schoolroom from day to da times of trial and stress to their mature minds as "the shadow of a great rock in Then would come the teacher's exceeding but not here and now. "Inasmuch as ye least of these little ones, ye did it unto Me."

THE Education Committee of the London has drawn up a report upon the questic additional training accommodation for teacl mittee assumes that the Council will desi soon as possible that all new teachers appoi public elementary schools shall be certificat Assuming the average professional life of ten years in the case of a woman and ni the case of a man, 1,122 women and 295 quired to make up the annual wastage in I ary schools. This number, however, mak for new schools, and it appears, therefore, be taken as the approximate number of ne will be required annually. Towards meeting quirement the training colleges within the cc provide about 915 teachers. The Council last adopted a proposal to provide a day training college for women at Avery Hill, reduce the deficiency to 455 places. The co that the Council should take steps to provid far as possible, buildings for the remainder demand. They are of opinion that the s chosen with reference to the localities fr students will be drawn. Considering the vision, the committee says that a college south-west London, another is required in west London, and a third in north or nort each providing 200 places or 100 students committee thinks that the colleges should primarily as day colleges, but that they sho contain provision for residential student required.

ON the recommendation of its Education London County Council has decided that an examination in the ordinary English subje tion, to take the place of the merit certificat shall be instituted for the ordinary graded pu schools maintained by the Council for the pupils at the age of fourteen, and that tl shall be termed the "elementary school-le ation." Also that the examination shall be all candidates, and that a statement shall b certificate of each successful candidate reco tion taken during the preceding school yeai examination in those subjects of instruction, have been taught at the school but are not leaving examination. The leaving examin confined to the ordinary English subjects, viz composition, arithmetic, freehand and model needlework, history, and geography. In al jects the examiners will be instructed to tak the quality of the handwriting.

A COURSE for helping women teachers desi ing their knowledge of nature-study will t Horticultural College, Swanley, from J August 11th. Most of the instruction will be permitting) out of doors, rambles in the cou

xperienced teachers being the chief feature. ry address will be given by Mr. A. D. Hall, the Rothamsted Experiment Station, on mbined excursions for studying birds, pond wild flowers, trees, and grasses in their onments have been arranged. A speciality f the study of pond life, and the life-history of ra and other common insects. The college houses, orchards, farm, and fruit-preserving l be in working order, and students will be an insight into the work carried on in each Demonstrations and instructions in simple l on the care of school gardens, will be given. s in dairying and poultry keeping will also the work. As far as possible the open-air ke place within easy distance of the college, will be arranged to districts with varying ate, and the accompanying variety of natural ents having bicycles are advised to take them, be possible to go further afield without the lway journeys. It is hoped to combine the y excursions with points of antiquarian, other interest in outlying districts, and l be made to render the course useful both and school work. Intending students should rincipal at the college.

ho have passed the examination for Governes under the new regulations of the Board of vided that they have obtained distinction in l in one of the Sections G, H, I, J, K, are e exempt from examination in all the subheory and practice of education, required for f Associate of the College of Preceptors.

of the twenty-second year's work of the f Assistant-mistresses in Public Secondary h has now been published, is exhilarating ess schoolmasters develop a greater enthucation, and evince more earnestness in disappling with educational problems, the future ucation—elementary and secondary—will rest en. Students of education are becoming more pressed with the self-sacrificing devotion to ork shown by the mistresses in our secondary rls. While not neglecting those questions of which will influence their future status and olmistresses seem more ready to give their the improvement of educational methods and f the necessities of the girls they are expected Ve would commend the report to our readers of well-directed enthusiasm.

-first annual report of the Council of the ld contains abundant evidence of the con- of this comprehensive association of teachers cationists. The Guild, during the year with ort deals, had under consideration most of al problems of pressing importance. We cially the attempt which is to be made to e "Education Society" within the Guild. agree with the council that there is plenty iety to do, for, after all, teachers should be d with education itself than with educational proposed that important parts of the work itated society shall be, first, the planning of eriments, properly apportioned among comuals, the results of which will be brought collated from time to time; and secondly, the publication in easily attainable form of the scarcer works of past writers on education. We shall look forward with interest to the June number of the *Teachers' Guild Quarterly*, in which the full scheme of the Education Society is to appear.

The Executive Committee of the Headmistresses' Association has passed the following resolution and forwarded it to the President of the Board of Education:—"That we regard with dismay and regret the proposal for the abolition of the Teachers' Register, which, as regards Column B, even in this early stage of its operation, before the permanent clauses have come into effect, has done much to promote the solidarity of the teaching profession, to raise the standard of the qualifications of teachers in all kinds of secondary schools, and to cause the formation of sounder educational ideals than have generally prevailed hitherto. We are of opinion that none of these ends can be secured effectively by regulations of the Board of Education in connection with grants to secondary schools, and that such increase of direct official pressure is in itself deleterious to education, as destructive to that sense of freedom in which originality and initiative thrive, and in the end sure to deter many persons of independent mind from entering the profession of teaching. We trust that even now some means may be found for saving that portion of the register which affects the teachers qualified to teach in secondary schools."

The Central Education Committee of the Society of Friends has published a concise and useful pamphlet on the training of teachers for public elementary schools. Full particulars are given as to sources of information, and alternative courses of study for an elementary teaching certificate are outlined. Copies of the *brochure* may be obtained from Mr. Charles E. Stansfield, 29, Upper Redlands Road, Reading, price 2d. post-free.

In addition to the Clift-Courtauld and Pfeiffer scholarships to be awarded in June, the Council of the Bedford College for Women, London, offers two Deccan scholarships on the result of the entrance scholarships examination, one in arts, value £40 for three years, and one in science, value £60 for three years. The Deccan scholarships will be awarded only to candidates who wish to qualify themselves to earn a living, and cannot obtain their university education without pecuniary help. Candidates applying for these scholarships must submit with their entrance forms a written statement of their circumstances.

Suggestions for the celebration of Empire Day have been issued for the use of schools by the League of the Empire. A new lecture, by Mr. W. K. Stride, of Exeter College, Oxford, has been published, called "A Trip round the Empire," from London to Liverpool. The lecture is divided into six sections, and is a suggestive one for teachers. It can be given as a whole as an Empire lecture, or the separate sections dealing with the different parts of the Empire can be specially worked up by the teacher. The lecture can be illustrated by slides or sets of tableaux. Copies of the lecture may be obtained at the offices of the League, Caxton Hall, Westminster, S.W.

We have received copies of two of the sections—dealing with higher education—of the handbook prepared for the Education Committee of the County Council of the West Riding of Yorkshire. One pamphlet gives full information as to the scholarships, free studentships, and exhibitions offered for competition by the committee, and the other

tion in the relative subject. For the summer session, 1906, the professor's recommendation based on previous record will be accepted in lieu of a pass.

A MINUTE has just been issued regulating the distribution of the General Aid Grant for this year. This grant, it may be recalled, comes to Scotland through the operation of the financial clauses of the English Education Act of 1902. The minute proposes to distribute the grant in four main directions:—(1) To aid the capital expenditure on buildings for the training of teachers, on providing or extending central technical institutions, and on institutions for defective children. (2) To increase the grants to the secondary education committees for the purpose of increasing the number of bursaries for secondary education. (3) To make payments in aid of a properly qualified staff in the smaller schools. (4) To afford greater educational facilities in the Highlands and islands, and to encourage the teaching of Gaelic in those areas.

BY arrangement with the Army Council, the Leaving Certificate (University Group) of the Scottish Education Department confers upon its holders exemption from the "qualifying examination" of the Army Education Council. As the requirements of the Leaving Certificate are considerably higher than those of the "qualifying examination," it has been represented that considerable hardship has been thereby entailed on Scottish pupils desirous of obtaining commissions in the Army. The question of granting further facilities to such candidates has been for some time under the consideration of the Education Department and the Army Council, and the following modifications have been agreed to:—Candidates for Army certificate must (1) be pupils of approved schools, and not less than seventeen years of age, (2) have obtained the Intermediate Certificate and completed a post-intermediate certificate curriculum of at least one year to the satisfaction of the teachers and headmasters of their respective schools. The subjects of the Intermediate Certificate must include English, geography, history, mathematics, and two other subjects. These additional subjects may be either two languages or experimental science and one language. A list of approved schools will be published monthly in the Army List. Applications for recognition may be addressed to the Education Department forthwith.

THE Leaving Certificate examinations will begin this year on June 20th, and will finish on June 28th. In the circular announcing the date and hours for the various subjects, the Department again calls attention to the practice of presenting candidates in the same grade as that in which they have already passed. While strongly deprecating such procedure where only single subjects are concerned, the Department admits that this may be necessary for a few years in the case of candidates for the group Intermediate Certificate.

IN the House of Commons, Mr. Gulland, M.P., asked the Secretary for Scotland whether, in view of the effect upon education in Scotland of the repeated failures of the late Government to pass their Bills, and the difference of opinions about rates and areas, he would appoint a small Boundary Commission to consider in each district what area, or combination or division of areas, would be most suitable in the interests of primary and secondary education. Captain Sinclair stated in reply that he could not see his way to the appointment of such a Commission, as the question of area would depend largely upon the general principles of the Bill, and the proper place for a Boundary Commission would be after, and not before, the introduction of a Bill.

THE Scotch Code for 1906, which has just b contains few alterations on last year's. An ad Appendix IV. has been made presumably to m tion of those who complained that Latin and official place in the list of subjects of the higher- It is greatly to be regretted that no attempt h to meet the much more serious objection that t of such schools allows of little, if any, different the courses for boys and girls. Compulsory and compulsory science for all girls is altog sible on educational grounds, particularly wh served out to these girls in nearly all cases i chemistry. Science, once the Cinderella of th has now become its spoilt child, and lords other subject.

A CIRCULAR has been issued from the Edu ment intimating considerable modifications i ments for the Intermediate Certificate. Ins lower-grade passes and one higher-grade, for passes will be demanded, but these must all b sitting. Slight deficiency in any one subject pensated by excellence in another. Provision for taking into account the teacher's opinion o each candidate before awarding or withholdin After 1907 no school will be permitted to pre the Leaving Certificate (University Group) unless its curriculum has been approved for th stage. An approved curriculum must provid tion in English, mathematics, languages, or circular expressly states that a rigid uniformity will not be required, but, having regard to th the higher-grade schools, there is a general the only freedom that will be left to schools w choice. At the same time, it would be ung acknowledge that the new circular marks a step in educational policy. The practical al examination in isolated subjects, and the rec teacher's judgment in determining the succes candidates, must commend themselves to every with the vagaries of examination results on Teachers under the new conditions will poss tended power and responsibility, and the s Department's enlightened policy will depend in on the faithfulness and sound judgment that exercising them.

IRISH.

IRISH education is now in the expectant st bones seem to be moving. New life is appar take possession of them, but what form of yet knows. It is to be hoped that it will flow of animation through the whole syste merely galvanised quiver depending upon Boards at headquarters. We are hopeful, is inspired by the debate in the House of the end of March on Mr. Murphy's motion opinion of this House the provision for ed its branches—primary, secondary, and univ satisfactory, and that the interests of the Iri been, and are, suffering most ruinous injury delay in applying a remedy." The motion withdrawn, after speeches from all sides in s the motion. Mr. Butcher's was especially as Mr. Bryce said, for "fairness, singular tone, and beauty" in his appeal for a sett university question. Mr. Bryce's own sp appeal for time. Of its tone, little complaint He admitted that the salaries of Irish tea adequate and much below those of Scotland

nots have been tied during the last sixty difficult to unravel them all at once. Grants re urgent, and £35,000 will be assigned ational school buildings. The great draw- education is the lack of local interest, and to have less centralisation. Mr. Bryce factory scheme of university education can in school education he looks to the con- mall schools, the improvement of school ssociation of the people of localities with those localities, the improvement of attend- ion between the systems of primary and ation. The National and Intermediate be amalgamated and brought into closer technical education. The difficulties in the religious and partly due to the backward- inion. The Chief Secretary hopes to begin he status of teachers and the erudition of by consolidating the different educational

ees of inquiry have been appointed. The arrangements of Trinity College. It will revenues of the college and the way in applied, its government and administration, aff, and the system of examination and ll also deal with the method of awarding d, lastly, it will consider the place Trinity occupy in the higher education of Ireland making it more useful to the people of The commission is to be small and non- to act promptly. This may help to solve problem. One of the fellows of Trinity ulverwell, the professor of education, has ppeal for a consideration of what reforms e college acceptable generally to Roman sting the duplication of certain chairs and of the Board.

mmittee will inquire into the working of of Agriculture and Technical Instruction. whether the provision of the Act of 1899 d it, and the methods it has adopted, are ience to be well adapted to Ireland; what are desirable; also upon the relations of to the Council of Agriculture, to the Board nd to the Board of Technical Instruction; s to local statutory bodies, upon the funds nd the modes of employing them, and upon gard to other departments, especially those ucational functions.

Technical Instruction is at present con- cessity for further funds to enable local ect suitable buildings for technical schools; d employment of teachers of commercial ion for a further central course for the ual instructors; and proposals in regard s of domestic economy. The Board met committee of intermediate schools on discussed the programme in science and -7.

intermediate schools still hangs fire. The year after year refused to sanction the permanent inspectors, probably with some never came off, of dealing with the whole em. Temporary inspectors were appointed ve years, but clearly this was an unsatis- e, and turned out badly. Mr. Bryce, e matter in the House of Commons, said that the Government still consider it undesirable to create fresh vested interests in a department which may be the subject of some change, and added that he is still giving attention to the matter.

Archbishop Walsh, in a letter to the public Press, has made the Roman Catholic position clear in regard to one point in the university question. Mr. T. W. Russell had stated that Roman Catholics would be satisfied with the University College in Stephen's Green if its status were improved and if it were adequately endowed. The Archbishop says this is not so. The demands of the Roman Catholics, as expressed in the Report of the Royal Commission on University Education, are for an entirely new institution in Dublin, whether a college or a university, and not a vamped-up college in Stephen's Green or elsewhere. It must be on a scale to meet the educational demands of Ireland, taken as a whole, and must be endowed on a liberal and adequate scale. This cannot be satisfied by any reorganisation of the college in Stephen's Green. Could it be satisfied by a reorganised Trinity College?

The Provost of Trinity College, one of the Commissioners of National Education, at the opening of a new schoolhouse at Largymore, near Lisburn, explained some of the difficulties of primary education. On the introduction of semi-scientific instruction in 1902, the old plans for buildings became inadequate, and grants were stopped until new plans were approved. The Treasury then offered a lump sum of £140,000 on condition that no more would be asked for. This was, of course, refused, and since then there has been a deadlock. In 1902 there were applications before the Commissioners for 419 new schoolhouses and 597 improvements, and since then there have been 146 fresh applications. He argued that since education is compulsory, the State is bound to provide proper buildings, and cannot refuse or limit the amount. Another difficulty is the question of amalgamating small schools. In theory the thing is simple; in practice very difficult. The difficulty is partly religious and partly a matter of distance. It is not a question, however, of uniting Protestant and Roman Catholic schools, but of uniting various small Protestant schools. The schools act as feeders of the Church, and whichever denomination sacrifices its school risks the existence of its church in that locality. This, however, does not conduce to religious toleration. On the matter of distance, infants cannot be expected to walk two miles to school, and, when their short hours are over, must they wait an hour or two for the older children to see them home? But surely this difficulty might be solved, as it is in parts of Germany, by school vans to take children to school and bring them back when they live at a distance.

WELSH.

The further development of the Welsh University Colleges is limited by the permanent available finance. In a deputation from the colleges to the Welsh members of Parliament, it was pointed out that Welshmen, owners of property, and indeed all classes had contributed liberally to the Welsh University Colleges—and in proportion to their means splendidly. The contribution of Wales to the colleges must not be judged by the absolute amounts, but by the amounts relatively to the resources of the community and to the advantages conferred by the institutions on the country. Principal Reichel showed that, taking the area of Wales as one-seventh and the population as one-eighteenth of that of England, the Principality should have had, if endowed for education on the same scale as England. (*a*) according to area £90,365, (*b*) according to population £35,147.

It is proposed to extend and alter the Barry County School Buildings. Plans have been approved by the Governors, and have been sent to the County Council Education Committee for confirmation. The estimated outlay on the schools, to provide accommodation for 350 scholars, is £7,000. There will be a large central hall, which may also be used as a dining-room, and shower baths for boys and for girls.

Dr. Macnamara at Mold gave some statistics which place Wales in a favourable light educationally. He stated that of the money sent down from the Imperial Exchequer since 1890, under the Local Taxation Account, Scotland spent 30 per cent. of her subvention in relief of rates, England 5 per cent., and Wales every farthing upon education. In England, excluding London (which was a very special case), the amount of rate spent in education was equal to 7d. in the pound, in Scotland 9·3d., while in Wales it reached 11·7d. England spent 3s. per head of her population on education, Scotland 4s. 10½d., and Wales 5s. 8¾d.

The Flintshire County Council has received a deputation from the Temperance Association of Flintshire and Denbighshire urging the systematic teaching of temperance in the schools. It was suggested that the school teachers, as far as possible, should give the instruction. It was pointed out that if a total abstinence test were introduced, it would be resisted by the National Union of Teachers. A representation of the primary school teachers on the Education Authority stated that his experience of the temperance reading-book was that it was the "driest" thing in the school. He also thought if the subject was taught in the primary school it should be taught also in the secondary school.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A. Dumas, Adventures in Switzerland. Edited by A. Wright. iv.+28 pp. (Blackie.) 4*d.*—Two stories from *en Suisse*, the first moderately amusing, the second a little gruesome. The editorial work is not of a very high order. The English in the "Note on Dumas" might be improved; thus we may well object to such an expression as "the point of departure between the Romantic and Classic Schools." The only misprints we have noticed are the dropping of a word after *autant* (page 11, line 36), and *mésure* (page 29). What advantage there is in adding after *blafarde* "an old High German word" is not at all clear.

E. About, Les Jumeaux de l'Hôtel Corneille. Edited by H. Havelock. 43 pp. (Blackie.) 4*d.*—A pretty tale in which the virtuous and studious brother prospers, and the would-be man of the world also does quite well in the end. From the introduction we cull the wholly delightful sentence: "It often strikes one that the more a Frenchman approximates to English ways and notions, the nicer and more decent he is apt to be." The notes are satisfactory, except for some altogether superfluous etymology. What reader cares enough about *jarret* to wish to be told that it is connected with Provençal *garra* and Breton *gár*? This is sheer pedantry.

La Chanson de Roland. By S. Barter and L. Duchemin. 40 pp. (Blackie.) 4*d.*—The fine old tale is here *racontée pour les enfants*. A simple introductory note says all that a child need know about the *Chanson de Roland*, and there are no notes. The text is excellent in its lucidity. Well illustrated, it would make a charming gift-book; as it is, it is a capital little reader.

Classics.

Translations into Greek Verse and Prose Archer-Hind. 244 pp. (Cambridge Unive 6*s.* net.—This is a delightful book for the letters. Mr. Archer-Hind has a touch of ge composition; it is difficult to believe as we have not some ancient classic before us. P and Herodotean, verse elegiac and lyric, of measures—Mr. Archer-Hind moves with ease He has a wonderful tact, too, in his choice style. Herodotus would have delighted to and Sir John Mandeville in his own racy might have thought, as he comprehended tha profound passage on music, of which De C so highly, that Sir Thomas Browne reasone Gothic roughnesses become in Mr. Archer- clear-cut and refined; we seem to be reading of the Anthology. The quality is throughout Even in the twentieth century it seems, w bag in hand solicit trade patronage from scholarship is not dead. Mr. Archer-Hind is university which trained Porson, Shilleto, a as a composer we think he is equal to any of

Cicero Pro Lege Manilia. With Introductio Vocabulary. By Prof. W. J. Woodhouse. with illustrations. (Blackie.) 2*s.*—This boo pleasing contrast to the general run of sch is clearly written by a man who has a go of his subject. The introduction, dealing with circumstances of the work, is provided with standard histories; and, what is more, at th page are quoted in full the allusions made the text to the historical events which are de strikes us as an excellent expedient for dis a large number of notes. The pupil, after introduction with these references, ought t understand the allusions in the text, at least reading of the text. This must have cost th siderable trouble, and it has been done ver notes also show a praiseworthy abstention fro they give a great deal of information in a handy form. The book is fitted, therefore, of a somewhat advanced stage; it is certain in our opinion, for the schoolboy who requi vocabulary to every book he reads. Such instance, as that on the *equites* (p. 49) is q sary for the understanding of the text, ho it may be for a pupil who is beginning to antiquities. The case is different with the n (*scriptura*, &c.), which could hardly be left will be seen that the book suffers from the the editor has not the necessary knowledge o ments of schoolboys at the different stages o and so he mixes up what is suitable for the l what can only be useful for boys in the hi We may point out, in conclusion, one slip § 21 (p. 61) *ex omni aditu* (wrongly written, *omnia*) is adverbial, however it may be trans

English.

A Class-book of English Grammar. By W. and A. C. Muller. xi.+303 pp. (Longmans This is the fourth edition of a book which fr was designed to be complete in itself, to t enabling any student to cover the whole nece for a foundation in English study. If it is no it is at least sufficiently full to enable thos

her to do so with ease. The chapter on n" will repay careful study, and the ex- uestions are of high merit. We think it a e section devoted to the scansion of verse n entirely familiar lines, and does not make htest mention of the modern theory of perio- rse, which is certainly as well deserving of the more antiquated and cumbrous and often y method of counting syllables.

for Parsing in Colour. By E. Hastings. Edward Arnold.) *1s. 6d.*—For all who de- nar from young children, this book and its re admirable. The exercises are well chosen, le hands should succeed. A word or two of s required for the chart. The book may be e parts. So long as English grammarians re being nine (is it nine?) parts of speech, are really only three or four, so long Miss alks will be inadequate in number.

ion of Words. By M. C. Carman. 1–154 pp. .) *2s.*—This is an English grammar, quite but not better than the well-known grammars. k on the "function of words" is still a

tandard Dictionary. iv.+444 pp. (Blackie.) *2s.* wonderful at the price. In outward form it enlarged volume in the notable "Red Letter" the way of dictionaries it is about the most estment which a student of English for prac- s can be persuaded to make. In a compact nt form it presents the essence, as it were, kier works, and in matters of pronunciation inition it is thoroughly trustworthy and up- ey to pronunciation is printed at the bottom , so that there can be no room for doubt or his important respect. To dissolve all doubts jugation of irregular verbs, the correct plurals ouns, and so forth, the various forms which ume are given in full. The appendices are feature of this dictionary; two of these are d more than usually convenient. One brings mber of modern terms used in physics and and explains them with considerable fulness. a pictorial index of mechanical movements

the Making. By Eustace Miles. 1–161 pp. *3s. 6d.*—Mr. Eustace Miles is indefatigable, r that these notes are the outcome of lectures. cs for criticism, and we would suggest that uires condensation and re-arrangement; and ess—much more stress—should be laid on the individuality.

Ode on the Death of Wellington. 24 pp. *s written among the Euganean Hills, and Plant.* 40 pp. *Byron's Ode to Napoleon.* cie.) *2d.* each.—These little texts with their irable in their way, and, like all the former this series, will repay careful use.

y IV. Part II. By J. W. B. Adams. ace Marshall.) *1s.*—This little volume has upon the lines familiar enough to students elite Classics." It is strongly bound, which n and an advantage.

s The English Mail Coach and Joan of Arc. rk. xvi.+121 pp. (Ginn.) *1s.*—Neither of of De Quincey is well known except to students of his works. This educational edition ought to popularise them, for they deserve it. The editor's work has been well done, and his critical remarks are of considerable weight, though they are by no means lengthy.

History

Captain John Smith. By A. G. Bradley. viii.+226 pp. (Macmillan.) *2s. 6d.*—The hero of this last of the "English Men of Action" series is the man whose name is inseparably associated with the founding of Virginia, and in especial with the fortunes of Jamestown, in the first decade of the seventeenth century. But his history is longer and broader than this. Before he went to America he had adventures in France and in the East fighting against the Turks, and after his return from Virginia he had a busy life in England urging colonisation in the northern parts of the continent, and actually died "Admiral of New England." Much doubt has been cast on the veracity of John Smith in his autobiographical books, especially concerning his relations with Pocahontas, the Indian girl. Mr. Bradley takes the favourable view, and urges much in its support. Wonderful as his experiences were, they do not exceed the bounds of probability. But the main impression gained from the perusal of this book is the resourcefulness and power of dealing with men of all kinds that were possessed by Smith. When he was present, all went well in Jamestown. When he was absent, all was wrong. The book is delightful reading for anybody, and should be in school libraries.

The Story of England and Wales. By J. Finnemore. xii.+243 pp. (Welsh Educational Publishing Co.) *1s. 4d.*—We mentioned recently a book by the same author with the same title. That was a "junior book" suitable for Standard III. This is an "intermediate book" suitable for Standard IV. There is a goodly number of illustrations, photographic and other, in tints. The text is well written, and is all but up to date. Naturally, Welsh history has a larger proportion than usual, and this crowds the general work, so that the book is only a reader, and is especially scanty towards the end. Only sixty pages are given to the period after 1660.

The Romance of Empire. By P. Gibbs. xv.+478 pp. (Arnold.) *6s.*—This is a book for the school library. It will please the fourth form. The author is enamoured with what he calls the "romance" of the story of the British Empire, but hopes that "the name will not impute (*sic*) the accuracy of the facts." It is written in an enthusiastic strain, and we must not be too particular. But we hope even the fourth-form boy will not be led away by such logic as this: "The imposition of taxes by the British Government was in itself a violation of the old law of Magna Carta which declared that no taxes should be raised without the consent of the Common Council of the Realm. As the American people had no representatives in the English Parliament, they were, therefore, taxed without such consent." And, in general, the book would have been better for a careful revision in points of grammar and printing. But there is a fine breeziness about the narrative which tells in the first half the story of British America and India, and in the second that of Australasia and South Africa. There are sixteen full-page illustrations and a (rather poor) index.

Lancashire: its Geography and History. 40 pp. (Pitman.) Paper *3d.*, cloth *4d.*—A map of the county, plenty of pictures, large-print text, poems, and songs (with tonic sol-fa music), such are the contents of this booklet, well adapted to the junior classes of Lancashire schools.

Geography.

Philips' Comparative Series of Large Schoolroom Maps: S. America. 74×59 inches. 16*s.*—This is a fine example of a well-known series of most excellent wall-maps. Drawn on a scale of 1 : 6,000,000, or just short of 100 miles to the inch, it is striking enough to catch the eye in any position on the wall of the "geography" class-room. Based on the orographical side of the subject, its familiar greens and browns emphasise the arrangement of highland region and river lowlands which is characteristic of the S. American continent. A judicious use of thick red lines indicates the political boundaries; railway and steamer routes are shown in black; towns are graduated with bold signs according to population. Like the rest of this series, it gives the purchaser more than his mere pound of flesh; it includes Central America and the West Indies, and colours them up to the sample of the mainland. It provides, too, three insets of interest:—(1) England and Wales on the same scale as the general map—a most useful feature, but one too often omitted; (2) a political map of S. America, coloured clearly, on one-fourth the scale of the large sheet; (3) a section across the continent from Iquique to Victoria (Brazil), which shows the extent of the great central plain of El Gran Chaco, as well as the relative lowness of the Brazilian plateau compared with the Andes. But we have praised the series—from the teacher's point of view—so often, that there is no need to repeat ourselves. Our simple advice is "Get it." The man—or woman—who cannot teach geography from these maps should take to manual training or mathematics.

The Home and Abroad Atlas. (Edward Arnold.) 8*d.*—This is a wonderful eightpennyworth. It contains twenty-four maps, many of them (especially the physical ones) very good, none of them overcrowded with names, and all of them fairly up-to-date.

Mathematics.

Geometry, Theoretical and Practical. Part I. By W. P. Workman and A. G. Cracknell. xii.+355 pp. (Clive.) 3*s.* 6*d.*—The number of text-books of geometry that have been published within the last three years is very great, and though none of them will probably be accepted as in all respects satisfactory, one must hope that there will be a gradual approximation to agreement on the leading features of a fundamental subject of elementary education. The rigid separation between theoretical and practical geometry has, we hope, ceased so far as the primary stages of school-work are concerned; even after formal geometry has begun, the practical side of geometrical instruction should not be lost sight of. The text-book under notice combines the theoretical and the practical in a most interesting manner, and shows on every page the skill and care with which the material has been put together. The greater part of the Introductory Course has already been referred to (THE SCHOOL WORLD, Vol. VII., p. 211); the range of this Part of the complete text-book coincides, roughly, with that of Euclid's first four books, the logical sequence of the propositions following closely that of the Cambridge syllabus. Very great care is bestowed on riders, not only as exercises on theorems already established, but as introductory illustrations of the harder theorems about to be proved; one is almost inclined to the feeling that the work is overloaded with easy examples, though probably teachers will welcome the numerous exercises provided for every stage of the development. Occasional notes on fundamental difficulties will be of great service to thoughtful teachers; the caution shown in the treatment of the tangent as a line which meets a curve in two "consecutive points" is in marked cor customary practice, and is fully justified. Th whole will compare very favourably with any works on elementary geometry, and is well w attention of teachers. Is it too late to ask th *Simson Line* (p. 311) should be discarded Simson's name deserves to be held in reve lovers of geometry, but Simson has no clain covery of the *Wallace* Line.

Science and Technology.

A Manual of Carpentry and Joinery. By viii.+500 pp. (Macmillan.) 6*s.* net.—The a a thorough knowledge of carpentry and joinery depend on the opportunities which a student becoming acquainted in the workshop with pra such as the different kinds of timber in ge constructive purposes, and the various forn tools. In addition to this practical training, further information, consult text-books, and will be found to be very suitable for the p author first describes the sources, uses, and various kinds of timber, and then supplies plane and solid geometry and mensuration. on tools, which follow, include not only clea and illustrations of hand tools, but also ex graphs of various kinds of wood-working ma remaining chapters deal with joints and fast roofs, doors, windows, and miscellaneous ca structions, including scaffolding, wooden-fran conservatories, and other subjects. A useful c mechanics of carpentry is included. Mu evidently been taken with the numerous These are clear, practical, fully dimensioned, good practice. The summaries given at the various chapters, together with the questions from examination papers of the City and Guil Institute, should be useful to teachers and s particularly those who are preparing for this

Miscellaneous.

On Professional Education, with Special Medicine. By Prof. T. Clifford Allbutt. (Macmillan.) 2*s.* net.—Here is some more s for the schoolmaster. The slow improveme secondary education is certainly not becaus authority do not give advice enough. The indeed, has been known to plead that it is of counsellors which confuses him in his w his endeavours repeatedly from one track to there is such unanimity in this work of ' schoolmaster, gibing at the schoolmaster, guy and exasperating the schoolmaster in ever way "—to quote Mr. H. G. Wells—that it all teachers set to work with unanimity and see if it is not possible to inaugurate a syster education which will really educate our boy not instruct them, which, as Dr. Allbutt aga is a widely different matter. Then, inst salient defect of the boy, as he leaves school, subservience to a wooden routine or conventio there to be perpetuated," as Dr. Allbutt ur leaving school will have few defects and be r intelligence, quick imagination, and all-roun ness. When Prof. Allbutt with his exper write: "at present in England the schoolm placent," it is clear there is much that is w commend this thoughtful address to all te hope that they will translate its wise maxim action.

CORRESPONDENCE.

do not hold themselves responsible for the expressed in letters which appear in these As a rule, a letter criticising any article or ated in THE SCHOOL WORLD *will be submitted ributor before publication, so that the criticism may appear together.*

uipment for Shooting in Schools.

that the interesting article by Mr. C. M. April number will encourage many teachers lubs for their pupils. At the same time, there ay who, though desirous of teaching their hoot, will be deterred from doing so by reason lerable initial and annual expense entailed. may be unable to secure a piece of ground range. It may therefore be of interest to to know that a successful rifle club may be arried on at a cost greatly below that given

ifle used will be an air rifle; but I do not who may choose to use such a weapon will done so. An air-rifle club was formed at the l-Teachers' Centre some three weeks ago, and ly sufficient evidence to show that the club has ful career before it. Mr. Stuart in his article better to shoot with air-guns than not to but boys do not take so much interest in it ' the real thing,' and nothing like the same be obtained."

privilege to serve from 1899–1904 as sergeant rgeant of the Durham University Company, During those five years great attention was -tube shooting by the officers of the battalion, equence I spent many hours weekly coaching any league and other competitions promoted. cided to form a rifle club at the Sheffield s' Centre I naturally wished to use the but after careful consideration I was forced ne other weapon, because of two reasons. lace, the expense was too great; and, in the I could not secure ground for a range near Our playing-fields are three miles from the to be able to shoot there only would mean oting would interfere with games. The only le for regular practice was the Centre and it was impossible to place proper butts

ting the Dronfield Grammar School in , the headmaster, Mr. C. Baggaley, showed e manufactured by the B.S.A., and I at once opt it for use at the Sheffield Centre. It is weapon, is 43in. in length and weighs 7lb. with either pistol grip or straight hand stock £2 5s. and £2 10s. I have tested the rifle ly, and have no hesitation in saying that up (I have not tested it at greater distances, guaranteed up to 50 yards) it is quite as ay rifle can be.

iron target (described below) is generally hased some N.R.A. miniature targets (1in. y and used them at practice last night and y lad who attended was allowed one sighting n shots at 12½ yards. Eighteen targets have e lads used two targets each), and the follow- re made (h.p. 35) :—

o 29, three 28, two 27, three 26, one 25,

I do not think the Morris tube would have been more accurate.

With regard to the want of "realness" which Mr. Stuart alleges exists when using an air rifle, I can only say that I myself enjoy using the air gun quite as much as I did the Morris tube, and three of my lads who have had some experience with Morris tubes, think the B.S.A. air rifle a much more satisfactory weapon. In the matter of recoil, the movement of the piston produces a much more appreciable jar than is experienced when using Morris tube cartridges.

Some great advantages the air rifle has over miniature cartridge rifles are:—no elaborate butts are necessary; when used indoors there are no unpleasant fumes; the annual cost is trifling; practically no time is required to keep the rifle in good order. A Morris tube, to be of any use, requires a great deal of attention.

A description of the targets used will probably be of interest and use to your readers. The targets are made of ⅛in. steel plate. A ⅛in. hole is drilled through the centre to serve as a spot to aim at, and concentric circular grooves $\frac{1}{32}$in. wide and deep mark the position of the bull, &c. The target is screwed to a light wooden frame (⅜in. white wood), and a bell is fixed behind the hole in the target. The target is painted white, and after every few rounds a few strokes with the paint-brush give a new target. A sixteen-candle power electric lamp protected by a steel shield, serves to illuminate the target when necessary. The total cost of the target, &c., was but a few shillings. It is light, can be moved about to any position, and is indestructible. Of course, when using paper targets, it is possible greatly to improve a lad's shooting by keeping and comparing his targets, but the same advantage may be obtained when using such targets as the one I have described by carefully recording the scores made and noting the individual peculiarities of each lad.

In concluding, I would suggest to those interested in shooting, that, in addition to teaching the prone and kneeling positions, instruction be given in the sitting position.

H. W. COUSINS.

Pupil-Teachers' College, Sheffield.

Solubility Curves—A School Laboratory Experiment.

SOLUBILITY curves are generally represented to us as obtained by a series of experiments, each experiment involving prolonged agitation at a constant temperature and subsequent evaporation to dryness. The time required will generally put these processes beyond the reach of a school laboratory lesson, lasting at most for an hour and a half.

We have endeavoured to find an alternative method, in which a known weight of substance is dissolved in a known volume of water, and then the *temperature* at which it can just be held in solution is determined by alternately heating and cooling the liquid, as in the determination of the freezing-point of paraffin wax.

To take an instance, 50 grams of nitre were dissolved in 100 c.c. (not grams) of water by C. Gray.

Dissolved at 46½°, 42°, 39°·2, 35°, 34°·5, 33°·8 C.,
Crystallised at 30°, 33°, 33°·2, 33°·2, 33°·5, 33°·5 C.,

i.e. just saturated between 33°·5 and 33°·8 C. Then successive quantities of 10 c.c. of water were added to the solution, and the saturation temperature found after each addition, giving results :—

50 grams in 100 c.c. (=50 grams in 100 c.c.) at 33°·7
,, ,, 110 ,, (=45·4 ,, ,,) ,, 30°
,, ,, 120 ,, (=41·6 ,, ,,) ,, 27°·5
,, ,, 130 ,, (=38·4 ,, ,,) ,, 25°·5

These results, when plotted, are in close agreement with the solubilities given in the books, differing from them by less than 1° C.

It is not suggested that this method will prove as useful for research as it is for illustration.

Our experiments have only been made with ammonium chloride and potassium nitrate. Other substances may present greater difficulties due to supersaturation; but the addition of negligibly small amounts of the solid will sometimes bring the thermometer reading up with a jerk to the required temperature. HUGH RICHARDSON.

Bootham School, York, March 27th.

National League of Workers with Boys.

WILL you allow us to direct the attention of your readers to the recent foundation of the National League of Workers with Boys? The president of the League is the Bishop of Hereford, and the vice-presidents include Canon Barnett, Mr. George Cadbury, Prof. M. E. Sadler, and the Dean of Durham.

The League is founded with the object of linking together all who are working with boys, or whose influence reaches them—the teacher, the lads' club worker, the member of education authority, the employer, the civic worker, the religious worker, and, above all, the parent; and by conference, publications, and the usual methods of an efficiently organised society, to bring before them the best knowledge of the many problems they are grappling with, and the most helpful and scientific methods of work. The League will enter into no rivalry with existing societies. It will try to help to a better mutual understanding, to the end that each form of work may develop its own leadership, methods, and results to the fullest extent.

In the matter of the specialised study of work with the young, we in this country are behind America, where the Clark University is an example of world-wide fame, as, too, of world-wide influence, and where a General Alliance of Workers with Boys has been doing most valuable work for many years. The latter society has kindly promised its co-operation in furthering the objects of the League.

The methods of work which the League is adopting may be briefly summarised as follows:—

(1) The foundation of a national centre of communication between all workers and boys.

(2) An annual congress of members for the reading and discussion of papers. The congress will meet in different towns.

(3) The publication of the proceedings of the League and of other works.

(4) The foundation of a library, one section of which will contain, so far as it is possible to collect them, complete reports of work of all kinds with boys at home and abroad.

The library will be arranged for loan, and will be available for the most distant members of the League.

(5) The League will acquire, as early as possible, permanent bases for summer camps in the country and at the sea-side.

(6) The League will seek to give expert information and advice on any question relating to work with boys which may be referred to it, and to promote such schemes of work as may from time to time be shown to be necessary.

We shall be glad if any who are interested in the objects of the League will communicate with the Honorary Secretary, Mr. J. H. Whitehouse, at Toynbee Hall, E.

CHAS. E. B. RUSSELL.
J. H. WHITEHOUSE.

Sir Edwin Cornwall on the Rôle of

THE compiler of your interesting notes on Current Events" apparently questions the "the *rôle* of the city" "in the past history I venture to think that, as an historian, he i himself in a minority of one, and his atti tainly astound our classical friends. If "H empire" (I see he apparently rules out Great), its spiritual hegemony has, along Judaism and Christianity, been the greatest world's progress. If, however, your contrib the importance of cities by the number of s territory they possessed, I would merely insta *cité antique par excellence*, the empire of as it lasted, was the most potent factor i world for the preservation of "law and or called peace." I thought every schoolboy the Pax Romana.

Surely, from the point of view of progr the only lasting effects of ancient empires ha from the religious influences, those of the have thought that a moment's reflection on of the word *civilisation* would have saved yc from his amazing assumptions. Apologising your readers with these truisms,

A LOVER OF HISTOR

THE doubt as to the importance of the r in the past history of the world is not so " me in the note as to "A Lover of Histc Were it not that one's own thoughts, especi pressed briefly, do not appear the same to oth self, I should be inclined to retort the charge assumptions" on my critic. My intention direct attention to two systems of city gov of "free Hellas" and that of the mediæv perhaps the most important illustrations o European history. In these notes I refrain possible from any statement of individual especially from depreciation. So far as gene possible in history, and so far as one person the generalisations of another, I quite agree ments of your correspondent.

THE WRITER OF

Production of Artificial Speech So

MR. RIPPMANN in your April issue paragingly of the phonograph records of series. We have used them in this school, to be satisfactory for their purpose.

Of course, no such records are as musical voice can be. Nor does their value to the directly with this quality. Mr. Rippmann paper some misunderstanding on this head.

Perse School, Cambridge. W. H.

The School Worl

A Monthly Magazine of Educational Progress.

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To face first matter

'he School World

A Monthly Magazine of Educational Work and Progress.

JUNE, 1906. SIXPENCE.

CHING OF EXPERIMENTAL ARITHMETIC.

By C. GODFREY, M.A.
of the Royal Naval College, Osborne.

of experimental arithmetic are: ulus, (2) understanding. The aim ld-fashioned arithmetic was facility f execution.

is antithesis is imperfect; much of eaching had no aim at all. How- e statement will do very well for a suppose that the pendulum will con- between these two extremes to the ter. The point I wish to suggest at that we shall provoke reaction if we a danger that lurks in the new enuous practice in straightforward nust accompany experimental work re to be other than disappointing. oviso is, let the experiments be ere are experimental complications, see the wood for the trees. For of the attempts to illustrate vulgar squared paper lead to long-winded rom the teacher and confusion for

without accompanying lecture no lasting effects. Needless to e must be of the Socratic variety; nay differ as to which should come r experiment. If the experiments s they should be, I think the lecture

ese warnings and reservations, it be doubted whether experiment is ll. I may say, then, that I believe educational value of experimental ction with arithmetic.

is to decide where arithmetic ends egins. Many people advocate the ematics and physics. But, in prac- ols will find it necessary to draw a re. The mathematical teacher is machinery for the investigation of the physics teacher is using the said erhaps this distinction (doubtless t) will provide us with a means of ne.

Before going further, it may be noticed that the mathematician certainly crosses the line when he deals with mechanics. In America this science is left to the teacher of physics. The British custom is that the physics master treats mechanics experimentally, and the mathematical master works problems of the Cambridge type. This tendency of mathematical mechanics to become lifeless and artificial is the inevitable result of the split; the only remedy is for the same master to deal with practice and theory. The physics master will certainly not be able to carry theory far enough for scholarship purposes; so we conclude that the mathematician must bear the whole burden, and very pleasant he will find it.

As the mathematician has been forced to cross the line at one point, there appears to be no logical reason why he should not cross at another. The second point at which trespass seems defensible is hydrostatics. After all, mechanics applies to liquids as well as to solids; and the mechanics of gases, too, may reasonably be included, if we confine ourselves to Boyle's Law.

The mathematician, then, shall possess these regions, and the apparatus needed for exploring them; and the physicist shall retain the territories of heat, light, electricity, and magnetism. Further, it seems prudent to entrust to the physicist all experiments in which the details of manipulation are delicate or complicated; all experiments which are performed rather for their own sake than in order to reveal a principle.

I have wandered rather far from the original discussion of experimental arithmetic, but we cannot discuss the elements intelligibly unless we decide first of all what are to be the limits of experimental work in mathematics. At many schools there will be practical reasons which forbid the extension of mathematics that I have suggested. It will, however, be found, generally, that the physicist is very willing for the mathematician to relieve him of the work usually described as "physical measurement." This merges into experimental arithmetic, and I will now enumerate some of the experiments which are commonly found suitable.

I suppose that a good deal may be done in the kindergarten with counters, coins, and so forth, and I have no doubt that this should be done.

But, as I have no experience of teaching children under twelve, I will assume that operations with integers and tables have already been mastered.

Vulgar Fractions.

Explain their meaning with strips of paper.

Use squared paper to prove that $\frac{3}{5} = \frac{21}{35}$ (a rectangle of 7 by 5).

Use strips of paper to show that $\frac{1}{4} \div 3 = \frac{1}{12}$.

Decimal Notation.

Measurement of Length.—As in geometry books.

Ratio of circumference to diameter of circle (rolling cylinder, cotton round cylinder, paper round cylinder).

Measure diameter of sphere, (i) with calipers, (ii) with blocks.

Measurement of Area.—By counting squares (as in geometry books).

Areas of faces of solids; of curved surface of cylinder; area of circle $= \pi r^2$

Measurement of Volume.—Build up rectangular blocks with cubic inches (or c.c.).

Prove principle that volume of solid of uniform section = area of section × height.

1 c.dm. = 1 litre = 1,000 c.c.

Volume by water displacement (graduated measuring-glass).

Measurement of Weight (in grams).—Practise weighing (ounce weight, coins, &c., &c.).

For further practice, find areas by weighing cardboard figures. Area of circle. Verify theorem of Pythagoras. Verify equivalence of triangles of equal base and height. Verify that areas of similar triangles vary as squares of bases.

1 c.c. of water weighs 1 gram.

Find densities of various substances by direct determination of weight and volume.

Measurement of volume by *weighing* water displaced.

As the subject of the present article is experimental arithmetic, it will be well to stop at this point; further developments, such as the principle of Archimedes, are better classed with hydrostatics, and are a step into much deeper water.

A good deal of the above work can be done in an ordinary class-room. But water and a balance cannot be treated respectfully outside a room fitted more or less specially for the purpose. For a class of twenty boys, it is found desirable to have five tables, 6 ft. × 3 ft. (about 3 ft. high), each with four drawers, and one tap and sink at the end. We also need stools, store cupboards, and a large sink with a draining-table for glasses. It is convenient to have a table for the master, and a blackboard. Gas is not necessary, but the possibilities of the room are increased if a supply is laid on to the tables. Lists of apparatus are given in many books on the subject.

One master can manage such a class comfortably. A bottle-washer (5s. a week) will be needed, unless the boys are allowed to help themselves to apparatus from the cupboar begin with, it is hardly safe to allow culties of discipline do not occur; th too great.

The master will have to decide whet is to be kept together, or whether ea go at his own pace. The latter plan v work out of the class; it will be the fu lecture to focus attention and point the experiments. On the "Go as system, each boy must be provided w finite printed instructions; otherwise task will be an impossibility. Howe no lack of books which cater for this

Boys can work in pairs, and talk allowed safely (it must be confined t in hand). At the outset there will cases of petty looting (especially of n suitable "example" will generally p this; temporary banishment from t ment room is a severe punishment.

Some course such as that outlined a compulsory for Army candidates, an shows that they may begin it quite you as soon as they enter their public schc part of the work might be expected to babyish to an older boy, of fifteen, s a matter of fact, such boys take it ve

Most mathematical masters will so dodges of the physical laboratory, enough of them for this simple course. speaking, the difficulty that has to b parallax.

As for the lecture which I have re as a desirable appendage, half of a n lesson will be long enough. The cla be asked why they hold their ruler this than that; whether they read to the mercury meniscus, or the bottom, or what is specific gravity, and how many water weigh 1 gram.

To conclude, I can recommend e arithmetic as a refreshing change to matical master who can come by th funds.

SPELLING AND DICTATI

By Arthur Burrell, M.A.
Principal of Borough Road Training College

IT is a bold thing to try to say an on the subject of spelling and dic the present writer does not pre more than give a few practical suggest haps, if we could assemble a class of dren before a committee of schoolmas member of which was a personal frien recognised as a personal friend of th we might get valuable lessons in the many subjects; for children will talk know they may talk, and will talk se if we will only listen. But only here a

ioolmaster who sees with the child's
prehends with the child's mind, and
e school and its lessons are under a
spell. We may assume, therefore,
jority of schoolmasters are no ma-
that children do not confide their
them. It is a sad thing to confess,
little use in shirking the fact. Our
es in spelling we have forgotten; our
ulties we dimly guess at.
elling it is said that it bristles with
nomalies, and absurdities. Granted.
remains that we do not find spelling
n we grow up. This is not because
many laborious hours in acquiring
ly due to the fact that we are always
rsons who ride much in carriages
difficult; persons who use a bicycle
find bicycling difficult; the man who
d and write much finds spelling diffi-
spelling in adult life is simply a
onstant revision and constant prac-

rther told that spelling acquired with
easily forgotten. So is Greek; so
l conics and shorthand; and the reply
that given above. Spelling requires
ain, we hear that "educated" people
es. It is true; and educated people
ad a good deal. Their mistakes are
essness, to faulty visualisation, to a
spelling, to haste, and to neglect of
he spelling of particular words. As
fact, these "educated" bad-spellers
out of consideration, if only for this,
them are either not educated or are
t. They could spell if they liked,
n't care. Accomodate, ærated, sol-
rass, seige, benefitted, are quite good
hem.
well if we clear the ground by one
ments which, of course, have been
ds of times before, and the truth of
gain and again been questioned.
iculty in English is not one of spelling,
ciation. As a general rule, pronuncia-
ler brother walking fast, and spelling
ne toddling after him. People spoke
their words before they wrote them,
ey tried to make spelling phonetic.
says he lives at Aptrick. You have
map or consult a less simple villager
nd that his home is Appletreewick.
children see well, hear well, write
be well, and consequently spell well;
ster scarcely needs to trouble them.
at a certain percentage of his class
washed: he does not waste his time
the hands of this group. The per-
be small or large: it varies from
; but it may be disregarded. This
the child who needs no help is one
essons that we schoolmasters learn.
is to help on the strong, and thereby
eir powers.

(3) The definite writing out and learning of rules for English spelling may well be shelved. It is of little use to tell any intelligent being that the sound of *au* in "cause" is always represented by *au*, when he comes across in his next page paw, George, tall, thought, and caught. He dare not tell you your rule is no rule. Nor is it honest to tell children that nouns ending in *y* make their plural in *ies*; they are disturbed by "valleys," "buoys"; while if it be contended that the rule is generally true, still it is better to let anyone discover this by the instances he encounters. Even etymology is not always a safe guide: we cannot do more than rely on analogy. Only analogy explains such spellings as "father," "sovereign," "rhyme."

(4) Etymology can scarcely be added to the burdens the small boy has to bear; and a little etymology does not go far. The lists at the end of some books are, for children who do not learn Latin and Old English, useless; and word-building, which is put early in some syllabuses, should come at the close of the spelling-learning time. It belongs to strict definition, logic, and the syllabic divisions of words.

(5) Faulty enunciation by the teacher is answerable for a great deal of careless spelling in dictation lessons.

(6) In many schools no one system of spelling-teaching is followed throughout the school, and consequently there is no intelligent revision. Children are encouraged to forget wholesale.

(7) Mnemonics (and under this head I would certainly place analogy) are of the greatest possible use in calling to mind difficult spellings.

It seems from these statements, if they are true, that one system of spelling-teaching should be followed all through a school; that the learning of fixed rules should be avoided; that our chief care should be given to the most backward pupils; and that constant revision of work done is a *sine qua non*. The ground is now cleared for a scheme. It is universally admitted that spelling is a matter in which the eye plays as important a part as the memory; but it must be remembered that the eye deals chiefly with *printed* matter while the child is learning, and with *script* matter when the child is putting down what his memory dictates. These two alphabets are a source of confusion to the child which the teacher does not generally appreciate. Moreover, when a boy is asked to spell a word aloud, a third element of confusion arises, viz., the sound of his own voice. No problem of spelling is faced until the printed word, the written word, and the voiced word are all recognised. One instance will suffice:—Eye is one thing, *Eye* or *eye* is another, and I (the phonetic value) is a third. The shortest list of difficult words, *e.g.* ought, taught, George, shawl (all containing only one vowel), is not properly studied till the words can be by the child said, spelt aloud, written, and printed; for a child will learn to print very easily.

It would seem that in the early stages words should be arranged, not alphabetically, nor at

haphazard, but according to their vowel (or, in the case of longer words, their predominant vowel). Indeed, what we have to do is to make for our classes a rhyme index of the words we come across (it being assumed that no child will ever be asked to spell any word which it has not heard, read, or seen in writing or in print). Thus, "I," being one of the first words a child meets, the "I" list in its early stage will contain some or all of the following:—I, why, fly, my, try; and only in a later stage should we find eye, lie, die, dye, dyed, tried, sigh, high, nigh. Similarly, in the early stage should be found from reading or hearing such words as now, sow, down, about, out; and only in later stages should a list like this be found:—enow, drought, loud, doubt. The consonants may be left to take care of themselves till we come to our lists of difficult words, for, in a spelling-lesson, "ough" in "thought" is the *vowel*, and "augh" in "caught" is the *vowel*.

The spelling-lists, then, will be made for the class as we go on reading and talking; they will be arranged phonetically, according to the vowel or the predominant vowel; they will consist of words known to all the class; and they will be subject to constant (*i.e.* periodical) revision, the printed, written, and said word being always demanded—from the weaker pupils. This spelling-revision is bound to take more time as we ascend the school. The list is in the teacher's possession. But this provides for vowel difficulties only. The reading will very soon bring the class face to face with consonantal difficulties. The word strife presents no difficulties; it would fall into the *i* group with life, wife, wipe, mine, height; but the word knife belongs to another category with the spelling-learner; it is much more of a pitfall than "bright" or even "height," and it is placed in a first list of difficult or catchy words. This list of catchy words is nothing like so long as our vowel list when we reach the middle classes, but it tends to become longer as the child's reading expands. The words parable, canon, cannon, salmon, lamb, family, paragraph, present no difficulties whatever for our first list (our rhyming-vowel list), but on our second list they must be, as they are full of consonantal traps.

I do not see that the teacher can arrange the consonantal list on any strict system. If he must adopt an arrangement, it should be phonetic, as in the first case, and "baron" would go with words in which *r* is the difficulty, and "paragraph" would be grouped with the *f* and *r* words. It is obvious that "canon" and "cannon" (*if they have both been met with in reading*) will be learnt together; but it is likely that "canon," not to speak of "cañon," will be left until the child is well up the school; though nowadays very often a small boy will be found spelling the three and spelling them correctly—canon, cannon, cañon—though two of the words are Greek to him.

With these two lists, made by the teacher and kept by the teacher—lists expanding ascends the school, and subject to vision—the schoolmaster should be c such lists in existence, I believe homework might be dispensed with.

The right uses of dictation appea first, to familiarise children with g literature, and next, to give them which to exercise their knowledge o punctuation. With the former I do it seems to be part of the work in li regards the latter, surely the piec tated should be composed by the te who knows, better than anyone else pitfalls of his pupils. It is easy en coct short pieces which shall brir punctuation difficulties, and the wor puzzled so many generations may with in clever but seemingly innoc Here, and here chiefly, lies the mnemonic: and anyone who is in do spelling of "harass" and "embarra and "siege," "apartment" and "a "practice" and "practise," may for himself a mnemonic which will him all his life.

But I pity the schoolmaster who cises and dictations conscientious might save half his trouble by enco to ask questions. Ignorance of the of an unknown or semi-known wo and boys should not be encouraged write down wrongly, but to ask an rightly, the spelling of such words *writing down of an ill-spelt word t spelling*; while the writing down of t correctly, even though the teacher h for the spelling, aids the pupil to s correctly on a later date, especially asked for be underlined and re-w bottom of the page.

There remain two aids to spelling tion—the transcription of printed the transcription of handwriting. need be said, but every school an should be furnished with more or lithographed copies of handwritir cannot be purchased they can easily it is not saying too much to affirm our teachers would not be harmed pulsory copying of a few well-writte

To sum up briefly, spelling shou reading, should not be taught by ve should not rest on philological k should be threefold in character—or script; it should be learnt by list consonantal; and prevention of should be aimed at rather than the rection and underlining of words tha at. It should be subject to a w from the lowest class to the highest, teaching of it should cease when learnt to judge the new printed wor judges the width of a brook.

EACHING IN JUNIOR FORMS.

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II.

l form of the history lesson, viz., rative concerning the past, has been red in a previous article;[1] particular drawn therein to the necessity of interested co-operation of the in-lar, and various means of preserv-ested activity were suggested and d.

ıcher should not deal entirely with . The juvenile impression that his-ething that happened long ago"—iry-tale as distinguished from the day life—should be corrected by an son based upon different lines and present facts. The boy must be led istory is being made at the present at he himself is concerned in the At this age (8–10) this can best commencing with the story of the e, leading on through the incidents the history of his school and neigh-intention being that as he grows observe the reciprocal relation ex-ı members of the same community, ing to exercise the duties of citizen-

this applies especially to the early hing, where each lesson is more or in itself—the idea of continuity, of improvement, is apt to be obscured. their history in instalments; they keep each narrative in its own partment; they see a few isolated e, another there—and there appears of importance between. This par-ty in teaching history to juniors is y confining attention to one short orking that thoroughly. Very few erations of cause and effect which ılts and elder scholars in such a appreciated by juniors; these grasp striking facts of even a short syl-uple them with those simple inade-which most appeal to the child-mind. restricted syllabus tends to the t broad basis of elementary general is the best foundation for learning Attention was directed in the pre-to a method of using the map of an aid to the right chronological continuity of events, but in order young children the idea of con-progress in thought and action, ss lessons should be given on lines present with the past.

eriod should sometimes be devoted object of strengthening the pupil's ervation and inference in connection with the dress, manners, and customs of previous periods.

The Making of History, or The Personal Lesson.—At first we must be content with small beginnings on lines that *all* can attempt. Commence *viva voce* on the following model with several boys in succession:—

"My birthday is on . . . ."
"I am . . . . years old."
"I live in . . . .," &c.

Each boy called upon gives a complete sentence. Proceed to add fact to fact. "I have . . . . brothers," &c. Include games, previous school, and so on. Extend the plan, asking for three or four statements of a similar nature to the above from each of several boys, giving them wider liberty as to the nature of their facts, but insisting upon the right order as regards time. Encourage anything in the nature of additional information, as tending to individuality and freedom of expression. After one or two such experiments, the boys gain considerably in power, and one individual can be put up to tell his own life-story in short, distinct sentences. Make it plain that these personal facts are the basis of the boy's history. These facts are next to be reproduced by a listener, *viva voce*, the class being directed to note the variations and omissions. The reproduction is then compared with the original, and inquiry is turned towards the causes of discrepancy, in order that the class may gain elementary notions in the making of history with regard to such points as—

(*a*) the difficulty of reproducing all the facts;
(*b*) the likelihood of facts being exaggerated, or otherwise distorted, unless immediately fixed by writing;
(*c*) the differing accounts of the same historical fact, honestly given by different writers.

Further exercises in this direction should bear upon the doings in class, the story of the school, &c., and subsequently be turned to account in the composition lesson, care being taken that every boy has the opportunity of grasping the information by means of *viva voce* work. The attention of all should be often drawn to these two points: first, that they are making history—that is, recording known facts from the experience of one or more of the members of the class—and, secondly, that those present at the time and listening, differently understand and report them. Such written exercises should be collected and preserved until later in the year, and then distributed to the class and re-examined.

Talks illustrating the government of the school, the delegation of authority, the interdependence of the several members, the effect of the individual effort upon the work of the class, the need and, as far as possible, the reason for rules, and so forth, all tend to make the boy an intelligently responsible member of the school, and prepare him to apply this side of his experience in the larger arena of national life and history.

In the Progress Lesson we connect the present with the past. The aim here is to show con-

[1] December, 1905.

cisely and graphically the progressive steps by which mankind has advanced, to emphasise continuity of thought and action—points which are apt to be lost sight of in a series of more or less detached lessons. The steps in the progress lesson are taken in the reverse order of time, so that we may start from facts within the observation of the child, and also that the contrast between *then* and *now* may become more apparent, and be made the opportunity of emphasising the benefit conferred upon the community by the work of the individual. The amount of detail allowable at each step is a matter of some consideration, but since the aim is particularly to show continuity and well-marked progress, the ground to be covered should be mapped out previously, and the steps retraced in one lesson-period. The following steps will sufficiently intimate the style of lesson for a junior class. The children should recall the steps backwards and forwards at the end of the lesson.

Locomotion.—(*a*) Train—coach—horseback (pillion, &c.), walk; (*b*) motor—bicycle—hobby-horse—walk.

Illumination.—Electricity—gas—oil, fat (candle, &c.)——brand from wood fire.

Fire.—Matches—flint and steel—friction, &c.

Reading.—School-book—grandfather's book—horn-book—first printed book—manuscript—pictures.

Writing.—On paper, parchment, papyrus-leaves, wax, stone, &c.; with steel pen, quill (penknife), reed, stylus, chisel.

As an introduction to the lesson on manners and customs, a picture will be most useful. Select, as far as possible, a picture which tells its own story. When the class has looked well at it, remove it and ask what has been seen. In a first lesson expect short answers:—a man—a tree. "What did you notice first?" bright colours—large object. Replace the picture and ask questions upon it, and have the answers reproduced as statements by one or more boys. Later get the statements direct, without previous questioning, in the right order to form a story. Aim at getting reasons as well as facts. The observant boy may soon construct a tolerable narrative for himself, but all will be trained *to look for some meaning* in a picture. Use this information in the next composition exercise.

From this and the preceding article it will be gathered that the class use of the history-book usually considered suitable for boys of eight and nine is not advocated. Upon their first appearance books are eagerly welcomed and hurriedly scanned for the sake of their illustrations, but the subsequent lessons tend to suffer in freshness and definite interest. Let the teacher be the source of information in these early stages, where the personal factor counts for so much. At the end of this first course the child's mental powers will be stronger, and he will have had some experience in the use of his equipment; then a text-book, used under judicious direction, will confirm, modify, and enlarge in more formal language his previous knowledge.

A portfolio series of historical scenes, and illustrations of dress and customs, are of value than a supply of text-books fo to the teacher of junior boys. Such i can be exhibited each at the momen class is most likely to profit by the and there is still fresh stimulus in st later stages of the course.

The chief names and facts are pu blackboard as the lesson proceeds, in as to form a summary for brief recap the close. Since young boys have sor in remembering names, a group of th boys is made responsible for each new tioned. "Your new friend's name "Make room in your desk for . . plan gives to the untrained memory a simple task, and no boy is discouraged each follows with interest the fortune ticular name entrusted to his keep of exceptionally "bad" memory have early in the lesson some definite fact tc and are expected to reproduce it later

The accompanying outline scheme to be suggestive. Such a scheme shou up by the individual class-teacher, anc so adapted as to give personal inte course. Occasional lessons on the lir above may be interspersed. The sca ment will depend upon the time availa

Outline Scheme of Histor

Round about the Great Sea.—(Map of Medi Nile, with narrow strips of colour on shc fading away to grey for unknown ai regions.)

The first men compared with boys growing —How do such account for their origin?—Me trees, &c.—How account for phenomena imp stood—Whence comes river, wind, &c.— sun, &c.—Origin of wonderful tales. Descr of sea—In the "middle of the E."—Supp earth. Earliest food—Drink—Method of Where was the rest of the world?—Why th oldest—Touch on methods of preserving reco on paper for ordinary purposes, parchment purposes, stone (*cf.* grave-stone, foundation ment, &c.) for people yet unborn—Where h oldest record on stone? Thus prepare for

The Story of the Stone (Book).—(Previous r of Egypt, Pyramid, Cleopatra's Needle Joseph before Pharaoh, &c.)

Recall above notes on records, &c. Leac simple facts concerning ancient Egypt, and them. The Nile overflow—The famine Egyptian belief concerning necessity for pres Mummy—Embalmed (Midianites who carried on old trade-route carrying spices)—Use of p built—Touch on picture-writing and discover —Rosetta stone. In elucidating picture-writi an Archer, B was a Butcher, &c. Moses in t rushes (papyrus) on Nile—Israelites' journey Sinai—Jordan, &c., forcing original dwellers In readiness for

The Earliest Sailors.—(Map as before. P nicians trading with ancient Britons; B burnt-out log.)

Recapitulate, dwellers on coast—Mountai

took to sea—Earliest known methods—Coast
coast—King of Tyre and cedar for Solo-
—Phœnicians—To Cyprus—Growing bolder.
ng Great Sea—Carthage—Greece—Tarshish
of world. Beyond—Outside the gate (pillars.
Show sketch-map of known world, with
ond. (Pygmies—Everlasting ice, &c.) Notice
map. Who will go out beyond?—Adventure
diz)—To W. Africa—To Tin Islands—Use of
&c., for bronze (*cf.* penny)—Why not iron—
rmation—Way to do things—Alphabet. The
ready to *learn* and to use their knowledge.

nd their Heroes.—(Map of Eastern Mediter-
Photographs of temples, &c.—Acropolis,
-Plaster cast, copy of Grecian sculpture.)
auts—Some adventures of Ulysses—One or
prominent gods—Olympic games and laurel
nguish gods from heroes—Direct attention to
care for his body—Spartan boys—Love of
oroughness in work, &c. Why do we re-
ce to-day?—Direct attention to any classic
r ornament in neighbourhood. Recall Greeks,
pare with

nd their Heroes.—(Map of Italy, &c. Picture
n. Horatius, &c. Macaulay.)
She-Wolf and Father Tiber—Relate story of
l Remus. ? Truth—Story of Horatius or
)well strongly on Roman character, obedi-
&c.
lity of such men (Greeks and Romans) be-
rs of known world; such a man was ———
Alexander or Cæsar).

Great.—(Map of Greece, Asia Minor, &c.)
e he lived—Give incidents to show character
to unite east and west not yet accomplished
—Trace his journey—Ephesus—Tyre—Egypt—
Trade with Athens, Carthage, Rome.
ourney to India and death. Julius Cæsar.

of the World.—(The power of Rome as illus-
Julius Cæsar's journey through Gaul and
ation of Britain. Map of Europe. Picture of
oldier—Eagle—Galley.)
te generally—Rhine—Seine—How passed—
lain—Landing on Britain (twice)—Story of
er—Across Thames—Back to Rome, leaving
behind him—Jealousy at home (Pompey)—
ral advantage of occupation to the Britons
dges, baths, &c. Compare Cæsar, Kaiser,

nd the Round Table.
s long for return of Romans—Why?—Some
ies—Angles—Saxons—Show whence—Britons
ed to west (Wales—foreign). As to outlook
heir desire for helper leads to tales of one
lready arrived, thus to the story of King
hts' promise or vow—Round Table—Why?—
of Arthur—Excalibur—Mention Tennyson the

Welsh and English nowadays—Remark change
ngle-land—Alfred the Great as well known

n the North.—(Map. Picture of Viking and

with previous invasions—Whence came the
race on map—Called Vikings—Compare with
stinguish—Vik—Creek—*cf.* Ips*wich*, Nor*wich*,
Wick, N. of Scotland—*Suther*land—Why—(Alfred and the Danes)—Further south to mainland—*Nor*mandy—Why. So lead to

The Normans in England.—(Map. Picture of Norman knight. Tournament, &c. Monk.)

Duke William's character—Make it typical of Norman attitude—Why *Duke*: *cf.* with *King*—His knights' manners, &c., language (*cf.* mutton, sheep, &c.)—Curfew—Why *cover* the fire—What Norman boys were taught (ride, shoot, &c.)—? Useless boys—Lead to monks, clerks, as compared with page, esquire, knight—Vows of knight—Search of adventure—Tournament, &c.—Adventures abroad—The Hospitallers at Malta—The old knight as monk, pilgrim, palmer, hermit. ? Extract from Scott's "Ivanhoe."

The Wars of the Cross.—(Map. Picture of Crusader, monk, Turk, Richard's coat of arms.)

The banding of knights together in search of adventure —Peter the Hermit—Richard the Lionheart. Trace journey to Holy Land—Mention there were several such, called Crusades. Mention Turks of to-day. Picture briefly Saladin, a worthy enemy, doing what he thought right. Explain "Mohammedan" sufficiently to show cause of fight—Koran—Return of knights—Richard's wreck and ransom —Disappointment and failure as Crusaders thought—But curious tales of countries and things seen stimulate others. Listeners incline to travel, not necessarily to fight—Leading up to real value of Crusades, *i.e.* information concerning other countries, travel and trade, &c. Show Venice midway between E. and W., and thus lead to

The Story of Venice.—(Map. Picture of canal, gondola, &c.)

Description of "her hundred isles"—The sea in the broad and narrow streets, &c.—Venetian ships to Crusades —The Doge—The marriage of the sea. The Venetian who wanted to know, *i.e.* Marco Polo, with Great Khan—Pekin, &c.—Accentuate fact that Chinese had been there *all the time*. Mention the "Merchant of Venice"—What would lead merchants and ships to leave Venice? and so on to

The Sea of Darkness.—(Map of Western Europe and part of Africa, and large expanse of sea to the west.)

Venetian ships go *via* Portuguese coast and Bay of Biscay to North Sea for trade—Why not some to S. after leaving Mediterranean?—Touch upon gradual extension of knowledge of W. coast of Africa by Portuguese.

Prince Henry of Portugal and his sailors. Madeira—Blanco, C. Verde—So far that "the North Star almost touched the sea"—What learn from this?

The New Way to India.—(Map showing Spain, Africa, India.)

The Cape of Storms—Vasco da Gama, little by little to India—Give description of difficulties, &c., and then India at last—Return laden with riches of East. How these had reached the West previously—What happened to Venice? How do we now reach India?

To the West.—(Sketch-map of known world without America.)

Sailing to the west you will come to China, India, &c. —Story of Columbus—West Indies—Spaniards to America —Account for name—Spain, the richest country in Europe —Magellan round the world. Pacific, &c. Show map of new discoveries and trace voyage.

Rise of England.—(Picture of Drake on Plymouth Hoe, &c. Perhaps verses on Drake by Newbolt, or the "Ballad of the *Revenge*.")

Spain commanded the land, because she commanded sea —Mention Holland and Spain, and danger to England—Need to defend coast, &c., need of good sailors, &c. Story

of Elizabeth's sea-dogs. Drake harassing Spaniards—Round the world—Singeing the King of Spain's beard—The Invincible Fleet, and what happened to them. Frobisher's attempt to reach China by N. America. Sir Humphrey Gilbert takes men to live (colony) in Newfoundland. Sir Walter Raleigh to Virginia—Potatoes, tobacco.

In the New World.—(Map of world—Picture of North American Indian.)

Give outline of first colonists' likely experience in New England, *e.g.* Pilgrim Fathers—The North American Indian and his ways. English in other countries; and so on to

The English in India.—(Map of India. Picture of native princes, &c.)

Simple facts in connection with Robert Clive—Trace voyage in sailing-ship of many months—Clerk to East India Co., *i.e.* merchants who traded (how fairly) with natives—French also wishing to trade, and quarrels consequent. Clive hated office-work and longed to be soldier. The natives take sides—Example, Black Hole—French gradually retreat from country, and Clive *v.* natives. Clive's order against accepting natives' bribes—Native regiments—Sometimes threaten to disobey—Why? Did disobey some years after Clive's death. Mention one or two facts of Mutiny. Why can a few English far away from home govern India?—Bring in a few names of places, Calcutta, Bombay, Delhi, &c.

The Story of Canada.—Similarly as "India," with Wolfe, Quebec, French Canadians, &c.; or,

Captain Cook's Story, with special attention to the colonisation of New Zealand and Australia; or,

The Rise of the United States of America, recalling the original colonists, and then quarrels with England—"We must help to make the rules we have to keep"—Washington and the meaning of union. England's mistake—Mention long and troublesome war (perhaps a few prominent men) and final independence; or,

The History of the American Slave ("Uncle Tom's Cabin").

Some Recent Discovery and its Value.

Nansen—Captain Scott and *Discovery,* &c.

FRENCH GIRLS' SECONDARY SCHOOLS.

By WINIFRED A. TODHUNTER,
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I.—THE INTERNAT.

LIFE in the *internat* of a French girl's lycée is very different from that of an English boarding-school. The lycée is not normally a boarding-school, but Camille Sée's law of 1880, creating State secondary day-schools for girls, added a proviso that boarding departments might be attached to the lycée at the demand of the township and at their own financial risk. Of this permission the townships have largely availed themselves, and nearly all French lycées have now an *internat*, the most important exceptions, as regards the girls' schools, being Paris and Lyons.

The difficulties of such large *internats*, as exemplified in the convent schools, had been already pointed out by many educational critics, yet they continue to flourish. In some cases it is a lack of lycées in the smaller country towns which leaves the parent no alternative; but it is more often the cheapness of the *internat* which appe frugal parent, who sacrifices so muc future *dot* of his daughter.

The *internat* generally occupies a w main lycée-building. Versailles is the with an *internat* on the English model, houses situated in different quarters of The girls sleep in white-curtained cubic dormitories. One *répétitrice* sleeps in mitory, but the *directrice* and the *éco* each their own suite of rooms. The bu comprises a refectory, study for prepari and a *salon* provided with piano and g Grenoble the lycée is a rambling olc building with plenty of free rooms, s girls rejoice in a dancing-room fitted wi The more modern lycée-buildings (of Lycée Molière at Paris is an excellen are built round a "quad," which is the ground. These courts, which are pl trees and shrubs and provided with pleasant strolling-grounds, but are not, suitable for organised games.

As regards internal organisation, the thing strikingly conventual about it, the fact that the lycées were started in to the convent schools. A boarding of seventy pupils in one building hardl that elasticity of organisation which portant in a girls' boarding-school. hours are long for the boarders. Besi hours' work in school, the girls stu hour before breakfast (from 6.30 to 7.3 for two to three hours in the evening.

Considering that the French girl games and spend their free time sitt school court reading or sewing—consid that they are *always* under supervisio surprising that so many French girls "nerves." For exercise on Thur Sundays (which are holidays) there is a "crocodile" walk, and this (except fo tunate girls as have friends living nea fetch them on these days) is the only the "world outside" that the boa Hobbies are not apparently encourage on account of difficulties of disciplin some months' stay in two different *inter* across only two girls with genuine hob take kindly to the needlework and taught in school hours, and are clever endow even the black, long-sleeved which is the school uniform, with finish of which the Frenchwoman is pa Other hand-work is conspicuous by i In this and all else the French schoolg the beaten track, and does not atter teresting wood- or enamel-work by w a Norwegian girl beautifies and furnishe In the *internat* the food is generally is so well cooked that the girls are wel on what might be thought a somewhat The meals are taken at small oilcl tables in the refectory. At 7.30 a morning school, there is a large cup c

; at 11.30 a.m. *déjeuner*, a meat and meal corresponding to our English mid-'; at 4.30 p.m. there is *goûter*, consist- large chunk of bread and a bar of or, in summer, a handful of straw- t is an amusing sight to see the girls ir *goûter*, which a maid brings into the rt in two large clothes-baskets. The f the day, a light egg supper, is taken n., two hours before bed-time.

ls themselves take no part in school t or organisation. The school is carried e huge army of officials—*directrice*, *ous-économe*, *répétitrice*, &c.—without the pupils for co-operation. The girls lves *fonctionnaires* in embryo, and their of passive acceptance. One rarely finds ther self-governing body even among the

The girls are never left without super- of school hours, and as the *répétitrice* sted with the same halo of respect as *seur*, but must enforce the rigid dis- r lot is as little enviable as that of the he boys' school. The school gives impression of a knowledge-market— eneous mass of students rather than ocial community. On the whole there e of *esprit de corps* and a lack of a responsibility in the elder girls. The ime may be largely due to the fact eachers are absentees. In an English chool the teachers are resident, sharing devoting all their time to the girls; but e the professor has nothing to do with of hours. The girls are brought to y a *répétitrice*, and after the lesson the livers the class back to her and goes. daily intercourse with cultured people, English parent expects in sending a l to Harrow or Cheltenham, is lacking ée. A softening and humanising influ- be exercised by the *directrice*, but as a far too busy, engrossed in fulfilling the nts of a highly centralised red-tape or- , to give time to social intercourse with The *répétitrices*, though persons of ck the prestige necessary to make their elt.

ually, the French girls excel. No one aught them can deny their mental acute- uld certain moral qualities be developed nch lycée pupil by such means as games, self-government, her intellectual versa- d make her more than a match for the gh-school girl.

II.—The Externat.

the French *internat laisse beaucoup e externat* is in many respects superior h school. The fact that "Die Kindheit e ist die Menschheit von Morgen" is lisation in the girls' than in the boys' The French girls' *externat*, supple- the home, often creates that "many-sided interest" in things intellectual which is characteristic of the woman of culture. The intellectual activity of the French sixth-form girl is illustrated by her conversation. At home we have perhaps been somewhat too zealous in "breaking up our knowledge idols," and there is a danger that even our girls may be unable to show enthusiasm for anything beyond the interests of the club, the magazine, and the hockey field. The intelligent lycée girl, on the other hand, is really interested in, and can talk intelligently on, literature, art, and politics.

To deal with externals first, the buildings, which are for the most part quite modern (the first girls' lycée, at Rouen, was opened in 1881), are excellent. The girls' lycée at Lyons, which is considered the finest in France, is quite a palatial building on an excellent site in the middle of the town. Broad corridors lead from the fine entrance-hall to spacious class-rooms, well lighted from the left, with plenty of blackboard space and modern desks. The heating is by *calorifères*, for the "homely" English fires, by which the teacher and front row are roasted while the back row is frozen, are not tolerated in French schools. The ventilation is by shafts opening into the main corridor, and during the five minutes' break between lessons windows and doors are thrown wide open. There is generally no large assembly room (other than the gymnasium), for there are, of course, no "prayers" to begin the school day. The lycée of Versailles has an excellent study for the sixth form, and there are in all lycées fine science laboratories and a studio. One is surprised to find the schools of the artistic French somewhat barrack-like and bare of ornament, but the schools are too young to have accumulated many treasures. Nor is the need for school decoration so great in France, where even the smaller towns boast a picture gallery, a cathedral, and a *jardin botanique*. The teaching staff consists of both men and women, but women largely predominate. For those who will face the barrier of examinations at the entry to the professions in France there are substantial compensations, especially appealing to the teacher, in the matter of prestige, security of tenure, and opportunity for further study. The French *professeurs* (as the teachers are called) have much the same prestige as an English university don, and just as the modern Oxford don withdraws to his *amoena deverticula* in the Woodstock Road after lecture, so the French teacher leaves his cares behind at the class-room door when the clock strikes the hour. He (or she) has no duties beyond the actual class-teaching and the correction of work done. For the women teachers, though the pay is not high, there are provided a pension and a *dot*. The cost of training is practically *nil*, for a girl of seventeen or eighteen who has passed the entrance examination to Sèvres (the training college for secondary women teachers) is *ipso facto* started in the profession. The State trains her for three years free of charge, and on completion of the

training course she is at once given work in a State school. Many of the women teachers are married, and the children of teachers are educated free of charge by the State, so that a clever daughter of a *professeur* can qualify as a teacher with practically no outlay. Of course, there is the corresponding disadvantage of the highly bureaucratic organisation of education in France, which leaves the teachers, as civil servants, very little scope for initiative.

Government syllabuses give directions as to what shall be taught and how it shall be taught, and there is a staff of government inspectors to visit the schools. Still, the advantages offered to teachers are considered so great that there is very keen competition for entrance to the college at Sèvres, and the syllabus for the examination is now so heavy as to put a premium on the pupil who is an adept at *chauffage*.

As regards the curriculum, the French theory is that *modern* culture should be the keynote of the girls' school curriculum. Thus, though the curriculum is comprehensive enough to have pleased the Encyclopædists, there is no Latin and Greek. The syllabus includes French, at least one foreign language, ancient and modern literature (the former in translation), geography, cosmography, history (general and national), arithmetic, geometry, chemistry, physics, natural history, hygiene, drawing, music, gymnastics, needlework, elements of law (*droit usuel*), and *morale*. Of these subjects the last two are unknown in English schools. "Law" is only read for one year (age sixteen), and aims at giving the girls a general idea of legal matters especially as they affect women in regard to labour, marriage, &c. *Morale* is especially interesting to us just now in view of the decision of several of the education committees to adopt it for country schools. The animosity of the Church to the State in France has forced on the authorities this somewhat extreme solution of the "religious instruction" difficulty. As the law now stands there is no religious instruction in the State schools during school hours. *Morale* is taught in the girls' schools from the age of fourteen onward; in the first year there are discussions of such subjects as the family, the fatherland, society, &c.; the following year lectures are given on the great philosophers, and extracts are read from translations of Plato, Aristotle, Epictetus, and from Montaigne, Pascal, Bossuet, and Kant. A year's study of psychology in its bearing on education completes the course. This teaching of *morale* is difficult for the professor, as it is so closely hedged about; anything on political or polemico-religious ground is "out of bounds." The subject also demands a certain maturity of outlook in the teacher. Dr. Wychgram, a German critic, naïvely remarks that the teacher of the subject should have "some experience of life and a perfect knowledge of the human mind and the world." The subject is either taught by the *directrice* herself or by a man teacher.

In conclusion one word must be said of the success of the teaching of the mother these schools. In these days of t magazine" girls who do not read the b national literature during school days ably never read it at all.

A recent writer[1] has brought some show that the modern English schoolgi even read the best English fiction. B who has been through the lycée cours a considerable amount of French lite has acquired a literary taste and powe sion which stand her in good stead in l

THE SCHOOL EDUCATION C FUTURE ENGINEER.

IT has often been urged that prog development of sound education is impossible in the absence o planned experiments, followed by a cc recording of results and a painstakin tion of the data accumulated, with discover principles of procedure for Educational methods have been too telligently based upon authority, whet successful schoolmasters or of popular education. The spirit of inquiry wh inspire teachers has rarely influenced like other departments of national activ have been content to "muddle throu how.

In the past, all this has been true t an extent, but there is gratifying reaso the younger generation of teachers has scientific spirit, and that there is a gro to test every educational formulary in ised scientific manner and to see how f justified by results.

In view of this tendency, the report mittee appointed by the Council of the of Civil Engineers is heartily to be wel in one department of secondary educati it maps out a line of conduct for the sc and formulates in clear language wh of professional men thinks the seconc ought to be expected to accomplish. cisely worded recommendations of the which have recently been circulate definite instructions as to what succ eminent engineers consider to be the e secondary education, so far as boys i engineering are concerned. Boys p the faculties and powers which have specified by experts are required. The moreover, have indicated the way in their judgment, boys may be suitabl with these intellectual characteristics. words, schoolmasters have been provic excellent opportunity of showing ho regard their work seriously and to v they are willing to carry out and record of skilfully arranged experiments.

[1] Miss F. B. Low, in the *Fortnightly Review* for Feb

nterest our readers to learn the steps
ıp to the recommendations of the com-
he Council of the Institution of Civil
first appointed a committee to consider
as to the best methods of training for
of engineers, including both scholastic
uent technical education. To make the
quite representative of every depart-
gineering, gentlemen were afterwards
ıe committee to represent every one of
ngineering associations. A prominent
e subsequent inquiry was given to the
the preparatory education of the future
secondary schools.
le of questions was issued to 120 repre-
of (*a*) teachers in engineering colleges;
sters in secondary schools at which it
ed special attention was paid to scien-
ıg; and (*c*) engineers not engaged in
Replies were received from 80 per cent.
hose opinions were invited; and from
s definite conclusions were deduced as
alent opinions on points raised by the

question propounded was: What is
age for leaving school, having in view
at the boy has ahead of him a practical
tical training which will cover certainly
ibly five, and perhaps six years before
ome a regular assistant in any branch
ing work?
er cent. of the replies recommended
ears of age, though nearly 20 per cent.
teen years of age.
er cent. of the authorities answering
ttee's questions considered a leaving
n for secondary schools desirable, 54
ıought such an examination should be
ds of the school itself and of external
conjointly, and 94 per cent. said that
ıation should be utilised as the equiva-
ıatriculation examination.
at majority of the referees thought it
ossible to develop further than has been
itherto the teaching of history and
in what may be called their commercial
at *précis*-writing could be included in
ıg of English subjects; and that ex-
ruction in essay-writing could be given.
eral opinion was that Greek should be
tirely from a secondary-school educa-
discontinued at an early age. A small
ought that Latin should be studied to
the secondary-school course. Modern
it was generally thought, should be
oquially or in such fashion as to make
rally useful, without the expenditure
sary time on theoretical grammatical
in the study of classical comedies.
majority of the referees thought that
thematical teaching could be given to
intend to become engineers in such a
help them later in the practical use
ıtics—such a method of teaching natur-
ıg much from the method which wou'd
be used if mathematics is to be merely an intellectual exercise, not actually employed later in real life, or even used for the sake of passing an examination.

The committee pointed out that in the great majority of cases the boys whose natural bent is towards engineering find the geometrical side of mathematics fairly easy, but have difficulties with the analytical side. It is considered desirable also that boys leaving school for engineering training should have more than the mere minimum represented by four books of Euclid, &c. They ought certainly to know something about logarithms and the elements of trigonometry, and also about similar figures.

It was generally considered desirable that the teaching of mathematics at school should be arranged with a view to attain the following objects:

(1) The practical use of arithmetic with the special object of obtaining correct results independently of the mere study of arithmetical methods.

(2) The encouragement of the use of contracted methods.

(3) The encouragement of exercises in mental arithmetic.

(4) The teaching, at this stage, of what Prof. Perry has called "practical mathematics," of the use of logarithms, of elementary trigonometry (limited, for example, to right-angled triangles), of the general ideas of projective geometry, including points and lines at infinity, and the use of the slide-rule.

(5) The elimination from instruction in mathematics of such matters as cube root extraction and elaborate algebraic equations, which are purely intellectual gymnastics without any direct usefulness.

It appeared from most replies rather that boys should be made superficially familiar with the general language and ideas of elementary physics and chemistry, than that they should be carried somewhat further in one particular section of such work.

It was also considered advisable to encourage the general study of what used to be known as "natural philosophy" as a subject of general mental training as well as of practical interest.

So far as drawing is concerned most of the experts sending replies thought that the future engineer should learn at school:

(*a*) Ordinary geometrical drawing with orthographic projection, including especially curve-drawing, both by co-ordinates and by purely projective methods.

(*b*) Freehand drawing from ordinary drawing-class models or from solids representing simple details of an engineering character.

(*c*) The drawing, in orthographic projection, of objects from actual measurement, a subject which has been called practical mensuration.

A consideration of the replies summarised in the foregoing paragraphs led the committee to make the following recommendations:

RECOMMENDATIONS.

(1) It is desirable that a boy intended for the engineering profession should, before leaving school and commencing to specialise, have attained a standard of education equivalent to that required by the Institution's studentship examinations; and that he should not commence his special training until he is about seventeen years of age.

(2) A leaving examination for secondary schools, similar in character to those already existing in Scotland and in Wales, is desirable throughout the United Kingdom. It is desirable to have a standard such that it could be accepted by the Institution as equivalent to the studentship examination, and by the universities and colleges as equivalent to a matriculation examination.

(3) Advanced teaching of history and geography, with instruction and practice in essay-writing and in *précis*-writing, should be included in the ordinary school curriculum; and the instruction in English subjects should include at least an introduction to English literature.

(4) Greek should not be required, but an elementary knowledge of Latin is desirable. The study of Latin should, however, be discontinued during the last two years of attendance at school, or after the standard required for the leaving certificate has been attained. Modern languages, especially French and German, should be studied, and should be taught colloquially or in such a way as to give the pupils a practical knowledge of each language, sufficient to enable them to study its literature and to converse in it with some degree of facility.

(5) Instruction in mathematics should be given by methods differing considerably from those usually adopted in the teaching of this subject merely as an intellectual exercise. The geometrical side of mathematics should be fostered, and before they leave school boys should be conversant with the use of logarithms, and with at least the elements of trigonometry, including the solution of triangles. It is also of importance that instruction in practical arithmetic should be carried further than has been generally the case hitherto, with the object especially of encouraging the use of contracted methods and operations in mental arithmetic; and of encouraging also the expression of results with only such a degree of (numerical) precision as is consistent with the known degree of certainty of the data on which they are or may be supposed to be based.

(6) It is preferable that boys should attain at school a general knowledge of elementary physics and chemistry, or of what is sometimes called "natural philosophy," rather than that they should pursue in detail some particular department of science.

(7) Special attention should be given to drawing; the instruction should include ordinary geometrical drawing with orthographic projection, curve-drawing, freehand drawing, and practical mensuration.

(8) Work in the nature of handicraft, such as carpentry or turning, or elementary f ing, may be encouraged as a recreatior not be required as a school exercise.

(9) It appears to be impossible, in curriculum of school work, to include ously time for instruction in such a surveying, which has been suggested.

The committee then suggests that of preparatory education should be co officially to the Board of Education circulated amongst those engaged in of secondary schools and engineering order that future schemes of tuition of contemplate entry into the engineerin may be guided thereby.

The committee is of opinion that if is taken it will assist in overcoming difficulty now universally felt in ins which applied science is taught. A considerable proportion of students en institutions ill-prepared, and at least c to be devoted to instruction which c secured beforehand. Proper preparat tial if students are to derive full t special instruction in applied science.

As Francis Bacon long ago ins comes out of error much more rapid of confusion, and as Huxley added, being right in this world, the best c is to be clearly and definitely wrong." of the Institution of Civil Engineers because it lays down a precise plan, certain results are expected to follo remains for the schoolmaster to do hi after he has subjected the proposals of experiment and summarised his shall know at least if the engineers their problem, or if we must begin ag a different way.

THE POSITION OF ASSISTANT-

REVISED SCHEMES FOR ENDOWED S

UNDER the majority of the schem present regulate endowed scho land and Wales, a headmaster h power of appointing and may at plea all assistant-masters." The governo sum for the maintenance of assistant-m other current objects of the school, ar master determines the allocation and this sum. The salaries are usual separate cheques from the governors t vidual master.

It is obvious that such conditions the above statement implies are onl on the assumption that the assistant-m should be, a very minor official. It whether he can be regarded as in any the servant of the governors; he is p not quite clearly, the servant of the On the retirement of the latter, every the teaching staff may be told, as ha

once, that his term of office has ceased

ral and just protest of the Assistant-ssociation against this state of affairs e are happy to say, bearing fruit. emes have been revised recently with clause amended to "subject to the the governors, the headmaster shall l may at pleasure dismiss, all assistant-. Another clause modifies the method of nd an entirely new one gives authority d of Education to interpret the scheme. cumstances great importance attaches ving pronouncement of the Board.

BOARD OF EDUCATION,
WHITEHALL, LONDON, S.W.
31*st March*, 1906.

Tottenham Grammar School.

your letter of the 25th instant, I am directed under the scheme which at present regulates on the Head Master has the sole power of l dismissing the Assistant-Masters. Clause 10 d new scheme, while reserving for the Head itiative in the appointment and dismissal of s away from him the sole power of appoint-missal. The Assistant-Masters would hold ervants of the Governing Body and the Head exercise his authority under the clause as the Governing Body. No appointment or the Assistant-Masters could be effectively the definite authorisation of the Governing

s dismissal to be effective would mean dis-consideration by the Governing Body, the ns raised in your letter would not appear to

I am, Sir,
Your obedient servant,
(Signed) W. N. BRUCE.

, Esq.,
irman of the
Branch of the Assistant-Masters' Association.

and full character of this construction ie will be appreciated by all interested g the status of teachers, especially sters. It would afford absolute ny judge of the intention of the Board the scheme, and there is at least a hat a county court judge would be cept this statement and rule accord-is view be correct, the claim of the t the assistant-masters in all public ld hold office as servants of a public fulfilled wherever the new clause is he reservation of the initiative for the is entirely in the spirit of the "con-the I.A.H.M. and the A.M.A., and ss conduce to efficiency. We are of the changes will increase true loyalty in the common room. The improved assistant-master will be a gain to the ofession, while its security will be the imposition of moral and legal on the governors.

THE TEACHING OF MODEL-DRAWING.

A CRITICISM AND SOME SUGGESTIONS.

By E. M. CARTER,
Art Master, Whitgift School, Croydon.

THERE has been a tendency in recent years to neglect the teaching of model or object drawing in many schools, and, so far as one is able to observe, the tendency appears to be on the increase. The cults of ambidexterity, freearmedness, brushwork, nature-study, and so on, have apparently deposed the more old-fashioned but, from an educational point of view, more valuable branch of an art curriculum. It is possible that these subjects have a greater fascination for young pupils than model-drawing as generally taught, and the fact that the results of their study make a brave show on the walls at exhibition times, and are calculated to make a greater impression on parents, school managers, inspectors, and the uninitiated public generally, may account to a certain extent for their popularity and the consequent neglect of model-drawing.

That this should be the case is much to be deplored, especially when one considers the importance of the subject as the foundation of all drawing, apart from its inestimable value as a means of developing the power of observation.

It is surely as essential for a boy, whether destined to be artist, artisan, or merely an ordinary citizen, to be able to make a rapid and accurate drawing of a solid object, such as a piece of furniture or machinery or a building, as that he should be able to arrange a number of brush strokes in certain geometrical patterns or to make a drawing in microscopic detail of a bursting leaf-bud. In this article I propose to point out what I consider to be the weaknesses of some present systems of teaching, and to make a few suggestions whereby model-drawing may be made not only interesting and popular, but a most valuable means of cultivation of the hand and eye, and, incidentally, of the perception and love of the beautiful in form and colour. At the same time, even in its elementary stages, model-drawing may be made to afford a means of art expression and to give ample scope for individuality and originality in style and technique.

One of the most glaring defects in the majority of systems is that the subject is treated in too mechanical and stereotyped a manner, often with reference only to the set of geometrical models prescribed in the syllabus of the Board of Education—models which, though undoubtedly useful as illustrating principles of construction, are apt to have a stilting and soul-deadening influence when used lesson after lesson for an indefinite period. The chief factors which militate against the usefulness of the lesson in model-drawing are the premature introduction of the theory of perspective, the use of construction-lines, and the reliance placed on certain "rules" for model-drawing (*vide* the majority of text-books)—rules

which are frequently applicable only to certain positions of the model.

Mr. E. R. Taylor, of Birmingham, in his well-known treatise published in 1885, made a spirited and emphatic protest against the introduction of perspective theory into the lesson in model-drawing; but that it is still extensively used is evident to anyone who has opportunities of observing. The following remarks, for instance, are embodied in a pamphlet of suggestions issued in 1900 by the Technical Education Board of the London County Council for the guidance of the teachers of art in secondary schools:—"The pupils should be made conscious of the existence of perspective. . . . The meaning of the horizontal, or eye, level should be explained. The teacher should show how objects below the eye and parallel to the ground vanish upwards and those above the eye vanish downwards. . . . A piece of white string might be placed across the room at the average eye-level to represent the horizon," &c.

I saw recently a teacher in an elementary school in the North of England giving an initial lesson in model-drawing on the lines suggested above. He commenced with a brief and fairly lucid summary of the principles of perspective, to which the class listened with a polite appearance of attention. He then proceeded to the "white string" business, whereat the boys brightened visibly, apparently in the vain hope that their teacher was going to do something with it, but sank quickly back into apathy on learning that this line was only the meeting-place for certain imaginary lines. All this time the actual model which the pupils were supposed to be studying was scarcely mentioned. In the end, after the class had listened for about twenty minutes, vainly striving to see these hypothetical lines and imaginary points, the teacher made a drawing on the blackboard, and the class copied it.

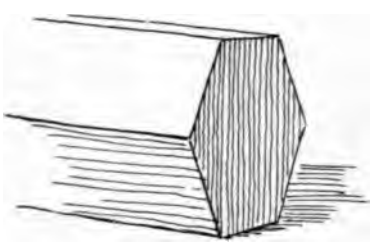

Fig. 1.

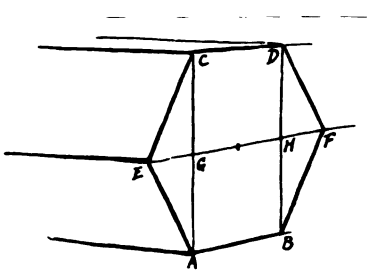

Fig. 2.

Fig. 3.

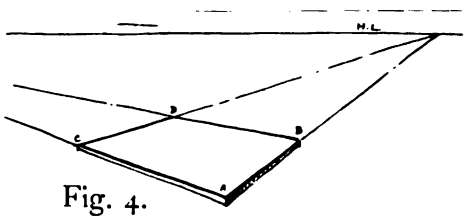

Fig. 4.

It is a remarkable fact that, while methods of teaching have advanced with such strides and in such rational directions in many branches of art-teaching, the model-drawing lesson still hobbles along on the antiquated crutches of *centre-line* and *cross-line* and a veritable scaffolding of imaginary horizontal and vertical lines, which effectually prevent the pupil from obtaining any intelligent idea of the form and bea object he is drawing.

One may see the results of such the work of adult students who have b up on such a system, where often the of a rule is allowed to override the the senses. One such student, in prep the South Kensington examination, w drawing a group which contained a prism, the end of which presented ance as Fig. 1. The student's render Fig. 2, and, although she herself ad it did not *look* right, she was perfec because, as she said, she had "mad B D vertical and parallel, and A B, E to converge, and E G and H F equal to and so forth, all in the approved styl complacently built up her drawing o metrical basis, utterly regardless of th proportion of the mass.

On another occasion the model-gr ed a appea which stude tion 3; on howe got nothi cuttin shape paper ing his e mode vince it wa secur the that h A B &c., the s in his line, and quite oblivious to the fac position of the horizontal line on being purely a matter of conject was a possibility of this line being high or too low, with disastrous cc to his drawing. In either of these c student had been trained to observe of the shape instead of merely the is very unlikely that such mistakes been made; or, at any rate, they woulc immediately detected and remedied.

The very manner in which such a proaches the drawing of an object is evidence of the mechanical nature of th The pencil is first held more or les length between the eye and the model much facial contortion, a number of m calculations are made respecting the di portions of width and length. The st proceeds to consider relative sizes o

e by receding lines with an imaginary
r vertical line, sometimes with the aid
nious device known as an "angle
Then certain points are placed on
ith geometrical precision, and finally—
groping for vanishing-points, the posi-
ich are purely imaginary, often in-
nd generally impossible of verification
is points are joined, and the drawing
No doubt an accurate drawing may
e made by such means, but as regards
which should accrue to the student
process, in the cultivation of observa-
wer of drawing, he would probably
as much if he were given a camera
to snapshot the model.
ly arbitrary method obtains in the
symmetrical objects, such as a vase.
ll cases the preliminary instruction
a line down the middle." This is
various horizontal lines across the
narrowest parts of the vase, or, as
eard a teacher airily remark to his
w as many cross-lines as you like;
e better." The outline of the object
wn through certain points on these
he finished drawing, in the majority
, looks as though the object were
e, or cut out of a flat sheet of tin.
ts of such a pernicious system of
e many and obvious. It tends to
awing a matter of *calculation* rather
rvation, and, by dealing exclusively
d points, it neglects entirely the mass
of the object, and so fails to afford
g for the hand and eye, and, more
till, that cultivation of a feeling for
should be the true mission of the
on. It is of no value as a training
d drawing, for landscape or archi-
wing, or for groups or objects con-
a variety of detail, varying in pro-
direction, as to make the application
s a practical impossibility. It entails
waste of time and effort in the draw-
preliminary imaginary lines, and their
ubbing out destroys the freshness and
of the drawing, and tends to grubbi-
tidiness. Another minor point I have
orthy, I think, of consideration, is,
who have spent much time and loving
the preliminary structural lines are
ry loth to rub them out and undo
ork on discovering later that the
wrong.
to a means of remedying the evils
ve indicated briefly as attendant on
of teaching, I would, in the first
sh all construction-lines of whatso-
ption, forbid, or at any rate dis-
e use of "thumb and pencil" or any
anical means of measurement, and
any reference to the theory of per-
til the pupil had attained to some
skill in drawing, and then it should
be used only as a means of *correction* or *corroboration*, and not as a help to the drawing. The real and ever-present difficulty which is the bugbear of both teacher and pupil in the initial lesson of the orthodox drawing course, *i.e.* the apparent convergence of the receding parallel sides of a board or cube, I would overcome by not beginning with a rectangular object at all; I would take the cylinder, placed on end, as the first solid. One great advantage of this is, that, in addition to doing away with the perspective difficulty, it permits of each student having a similar view of the model, to the obvious advantage of all concerned. It would be as well if it could be made a condition of admission to the model-drawing class that a pupil should be able to draw an ellipse quickly and accurately, in any position and of any proportion. The chief difficulty that besets the tyro is to estimate the roundness or proportion of the ellipse (I mean of course without measuring it), and when to this is added inaccuracy or slowness in the actual drawing, it forms a very serious bar to progress. I endeavour to anticipate this difficulty by providing that the ellipse, in great variety of size, position, and proportion, shall enter largely into the drawing-lesson for a term or two before a boy takes up model-drawing, insisting always that it shall be drawn freely and quickly, and without construction-lines.

I would suggest, as a prelude to the drawing of the cylinder, that a large plane circle of stout cardboard be cut out. This, held in a vertical plane, first "facing" the class and then "end-on," will demonstrate that the appearance in the first case is a circle and in the second a straight line. Now let the boys half-close their eyes, or more than half-close them, until the circle appears to them but a blur of light or colour; then, holding the circle between the hands, revolve it very slowly on its vertical axis and let the boys tell you what they observe. Now, if this were done with the boys' eyes wide open, the majority of them would simply observe that one side of the circle was advancing and the other receding, and would all the time be conscious that the thing was a circle, and would probably draw it as such. By observing the slowly-revolving circle with the eyes half-closed, the average boy will soon see that the straight line of the "end-on" view resolves itself into a narrow ellipse, which in turn becomes rounder and rounder until it is again a circle. The ellipse may then be held horizontally and the boys led to observe that the appearance of the ellipse goes through similar variations of *roundness* on the circle being raised or lowered. They should now attempt to draw the ellipse presented by the circle placed at various heights below the eye, the drawing to be done rapidly, without regard to quality of line, or finish, but solely with regard to shape and proportion. In no circumstances should the proportion be represented by the numerical ratio of width and length, but should be entirely a matter of judgment.

If a boy's drawing is wrong he should be encouraged to find for himself where the mistake lies. Let him hold out his drawing at arm's length, so that he can see the model either just above or below or to the right or left of his paper, and can take in both his drawing and the model at the same glance (Fig. 5). If this is done with the eyes half-closed, to shut out unimportant detail, a moment's careful observation will enable a boy to detect any discrepancy between his drawing and the model, quite as readily as by the clumsy method of endeavouring to find out how many times the imaginary minor axis will go into the imaginary major axis, and with infinitely more advantage to himself. The drawing of horizontal circles leads naturally to the cylinder placed on end, stress being laid on the fact that the lower circle appears a *rounder* ellipse than the upper one, and insisting that it shall invariably be drawn in its entirety, as the practice of drawing only the part that is seen results in such drawings as A and B of Fig. 6. Common objects of cylindrical form may now be dealt with, such as jars, bottles, tubs, &c., again insisting that details such as the label on a jar or the bands round a barrel be always drawn first as complete ellipses, to ensure that the pupil realises the roundness and solidity of the model. We may now consider objects formed of a truncated cone, or similar shape, as a bucket, plant-pot, cup, basin, and so forth, giving exercise in the drawing of circles of varying diameters at different heights, observing that the ellipses vary in *roundness*, irrespective of the size of the circle, but according to their distance above or below the eye. These objects, used singly or in groups, afford material for an almost endless series of valuable lessons, full of variety and interest. The brilliant boys may find occupation in the drawing and elaboration of minor details such as hooks, handles, &c., or in shading the drawing in pencil, pen and ink, or sepia, while their less gifted brethren are struggling with "principles." When these principles have been thoroughly mastered, and the boys have developed some sense of proportion as between various parts of an object and between objects of different sizes,

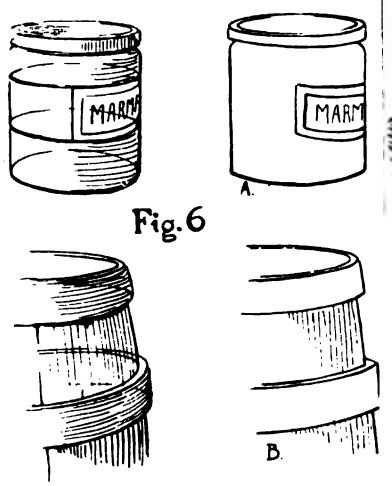

Fig. 6

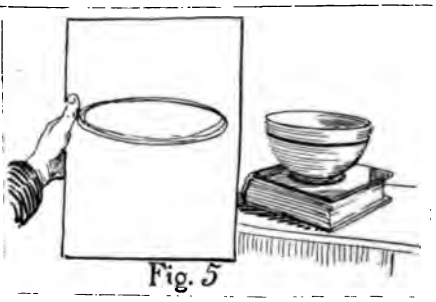
Fig. 5

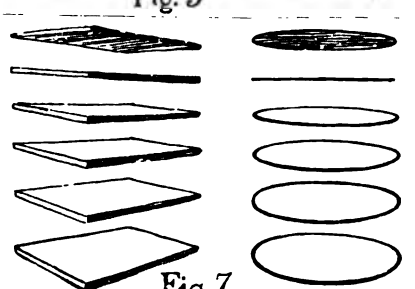
Fig. 7

we may then proceed to the cube and r objects.

Taking the rectangular drawing-bo illustration, place three or four boards other (ordinary 3lb. glass marmalade excellent supports, and give about distance between). Point out to the better still, let the class point out to th that the boards vary in apparent width to front as they ascend, as was the the circles (Fig. 7). Let them also ob the outer corners of the upper boards form more acute angles than those of ones. The boys may now make a s drawing of the boards, ignoring entir of perspective, but simply to ensure one realises the difference in the shap portion of the *mass* of each board; the emphasised by shading over the shap board in the drawing. Now take sepa each his limit outer not two by ligh quic verti whic the n a cut woul ally two tica then, mat posit near corn gard out judging distance by the eye alone. now make an attempt at the two n having first tried to realise their app by a moment's careful observation closed eyes. Directly these front edges let him hold out his drawing at full ar as before, so that he sees the model i under the paper. Assuming the dra the model to appear relatively as Fig at once be seen that the two edges in ing slope upwards too much, and will have to be brought down until th parallel to the corresponding edges of In the same way the direction of the b and finally the shape of the complete may be tested and, if necessary, cor will be found that the *nearer* horizont a board appears to slant more than sponding *further* edge; in other w appear to run towards each other as t

this stage that attention may be drawn erspective theory, when it may be used ans of confirmation of what a boy has bserved, and not, as is usually the case, him to draw without observation.

rocess may now be repeated with boards s sizes, and in vertical and inclined posi- en with rectangular solids such as books, airs, stools, and so forth, and eventually ups made up of rectangular solids com- th the cylindrical and conical objects pre- tudied, bearing in mind always that in no circumstances whatever should a mechanical measurement of either drawing or model be permitted, the work being tested in all its stages by frequent comparison with the model.

Fig. 8

It has not been possible within the limits of this article to give more than the merest suggestion of an out- a scheme which, if properly developed ried out by an earnest teacher who ied with a real desire to teach his to *draw*, and not merely to pass ex- ons, would, I venture to think, be pro- of much good. I do not claim that these ons form anything in the nature of a road" or a "short cut" to drawing— he reverse, for it is a much longer and fficult task to convince a boy that what ally sees is often quite different from that e *thinks* he sees, than to quote a cut-and- le; but I think that, if conscientiously out, they would conduce to a broader and eatment of the whole subject, and should a student who has gone through such a o undertake with confidence the drawing solid, from a can to a cathedral, and to , not by the application of rules and or by a process of geometrical construc- t by a sensible appreciation of the masses presented to the eye, and of the contrasts and shade, tone, and colour.

ISTORY OF ENGLISH POETRY.[1]

S book, to use the words of the preface, s intended "to describe the general move- nents of English poetry, as an art illus- the evolution of national taste." It is nded to give an exhaustive list of the in- poets, which is left for such books as 's. This explains why we have felt in it a certain incongruity in the bio- al details which precede the account of et's work. Such things are dull at best, think nothing of the kind should be men- tioned in the text but facts which bear directly on the poet's development, or on the history of poetic movements; all else is most properly relegated to footnotes. Mr. Courthope, however, has omitted to mention in his preface a very important feature of his work, namely, the connexion of poetry with politics and other influences social and philosophical. That there is a connexion between literature and politics has been taken for granted by almost all writers, but we are not sure that anyone has carefully examined all the facts so as to tell us exactly what that influence is. We are accustomed to speak of the extraordinary outburst in the sixteenth century as though it were a direct result of the defeat of the Armada; and yet this had been preparing, we do not say since Chaucer, but at least since the early days of Henry VIII. If religious intolerance and wrangling of sects produce first-rate literature, why was there not more of it at the end of the seventeenth century, and why have we so little prospect of it now? But these questions are too large for us to discuss; we only call attention to the fact that Mr. Courthope connects his literary and political movements in a most thorough-going way; not only so, but he actually applies the principle to individuals as well. He draws a "remarkable analogy" between the poetical career of Pope and the political career of Walpole (p. 183). He also takes account, though to a less degree, of the developments of prose, because *The Tatler* and *The Spectator* (for examples) aimed at a general reform of taste and manners.

Mr. Courthope's knowledge of these less-known byways of literature, we need hardly say, is full and accurate. It might be thought, perhaps, that the readers would be bored by a long procession of figures, most of them known to him only by name, or not at all, and some quite insignificant; but it is not so. True to his principles, the author presents the definite picture of those people to the mind by means of quotations from their works. He has more than a tolerant regard for these poetasters; he can pick out what is good verse, though it might not be supremely good, and he gives on occasion extracts to illustrate faults of taste, and so portray the downs as well as the ups of our literature. The author succeeds in holding a judicial balance when, as in the case of Pope, adoration has been succeeded by something like contempt. Although the book is not meant to be an anthology, a great number of the extracts give real pleasure. We may particularly mention a poem, once high in popular favour, now quite forgotten—Pomfret's "Choice." This charming picture of country life, and the quiet aspiration after intelligent ease, was well worth reprinting.

One other point we should like to mention. It is one which the author evidently takes for granted. But as he mentions it only by the way it seems as though he does not realise how foreign it is to modern practice, and also, we fear, to modern theory. In quoting a description by Prof.

[1] istory of English Poetry." By W. J. Courthope. Vol. v.; pp. (Macmillan.) 10s. net.

Butcher of the Attic style, the author applies this to Goldsmith in the following words:

"It is precisely the qualities thus admirably described which seem to me to make the ethical style of Goldsmith, both in prose and verse, looked at from this point of view, the most purely 'Attic' in English literature. He grounds himself on the spoken language of his country, and in *Retaliation* and other poems he shows a mastery over colloquial idiom as complete as that of Prior and Swift. But he adds to this, in his treatment of the heroic couplet, the 'touch of distinction,' learned from the literary practice of many generations of English poets from Drayton to Pope, of which I have so often spoken. If, in some of his antithetical turns, we are reminded, 'perhaps too forcibly, that this finely tempered instrument of language has been forged and sharpened in the rhetorical schools,' this only makes the resemblance between him and the Attic writers more complete."

We hold that this is absolutely true, and that no great literary style has ever existed which has not been founded on the colloquial idiom. They are not quite the same, of course, but, if the written style be such that it could not have been spoken, no matter how great the occasion might be, or how intense the emotion of the speaker, it is a false style. It follows that, if the colloquial is thoroughly vulgar or debased, and incapable of anything but vulgarity, there can be no literary style. It is the debasement of spoken English which now makes literary style so bad. We may hope this state of things is only temporary, but, for the time at least, there is no audience for what is good, and literature can be kept alive only by contact with life. The styles of Dante and Boccaccio were founded on the colloquial, which they refined and improved, no doubt; but their sources were sound and honest to begin with. The same is true of Shakespeare and his fellows, who wrote nothing which could not have been spoken. Indeed, all they wrote was spoken, and found an intelligent audience in the people of their own day. The same is true even of Milton, some of whose most elevated pieces of style may have been spoken, or were spoken, to an audience. But such a style as that of the Byzantine pedagogues, or of the modern Greek newspaper, or of the eighteenth-century pastoral, had no touch with life. These are all dead; the others live still.

We wish Mr. Courthope had thought of dealing with this topic, but, as he did not, we must say no more. As a critic, he needs no commendation; he has long since earned his spurs, and this book well maintains his high reputation.

Macaulay's Essay on Samuel Johnson. By N. L. Frazer. 75 pp. 8*d.*—*Marlowe's Doctor Faustus.* By J. Turner. 100 pp. 8*d.*—*Scott's Lay of the Last Minstrel.* By J. W. B. Adams. 128 pp. 1*s.* (Horace Marshall.)—These are three little volumes in the most agreeably presented series of "Carmelite Classics." We are glad to note their appearance in a more robust kind of binding than has hitherto been usual; but all the chief features of the edition are retained, and it will repay use.

THE HEALTHY SCHOOL.

THE exhaustion of the first edition, in 1902, and of a subsequent affords sufficient evidence of the this work and of the general appreciat which it has been received. In the pre tion some alteration and compression of part of the book, dealing with secondary has permitted the insertion of a chapt treats in useful detail of the important s protection against fire, and of a fuller c tion of training colleges, pupil-teachers cost of school buildings, and the like. Th part, concerned with elementary educatio mentary schools, has been practically r The portion dealing with educational a and their regulations has been brought th up to date, and includes the new rules ju by the Board of Education for secondary and the rules of the Scotch Education ment prepared in February of the pres as well as the regulations, published in elementary and higher elementary school

The planning of small and medium-size schools has received fuller consideration accorded to it in the first edition, an chapters are now added upon infant manual training and cooking centres, t school buildings, and the alteration and tion of old buildings for educational Another addition, not less interesting tha is a comparative survey of the systems planning on the Continent and in Americ is fully illustrated by a number of standa drawn to a uniform scale.

Although primarily arranged as an il book of reference for the use of the schc tect, the whole volume contains a mass o information which makes it a work of invaluable to everyone interested in the aspect of the educational work of the No other publication with which we quainted covers so wide a field so well tains such a mine of practical inform carefully digested and so impartially to the consideration of the education chapters dealing with the hygiene of sch that on the important subject of protect fire might be studied with advantage householder and by every builder.

The ventilation of school buildings too often made the battle-ground of rival Mr. Clay deals clearly and temperately subject, and shows that there is no one method of solving this difficult problem applicable in all circumstances, or capable worked successfully in the absence of a gent comprehension of the nature and the various factors which come into pl the widely differing conditions of mo In connection with ventilation, no m made of a simple expedient which is ofter

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[1] "Modern School Buildings, Elementary and Secondar Clay. 556 pp., with 450 illustrations. Second edition, enlarged. (Batsford.) 25*s.* net.

pecially when dealing with class-rooms
-rooms of small or moderate size, heated
en fireplace. The rapid flow of air up
ney of such a room has to be supplied by
of a corresponding volume of air from
he room. In colder weather, when the
is to keep most, frequently all, the
lets closed, chilly "draughts" are pro-
the air entering at a relatively high
ough the crevices below and alongside
nd from ill-fitting window-sashes. In
n as these auxiliary inlets are closed,
ghts from the remaining ones become
nd keener, or the chimney "smokes,"
he fire, deprived of one of its necessaries
ndeavours to draw the air it needs from
ney shaft itself. In such cases, if a duct
cating directly or indirectly with the out-
e made to open at a convenient spot in
h, the fire will be adequately fed with the
equisite for combustion, without lessen-
"induced draught" into the chimney,
ays so important a part in securing the
n of the room. At the same time, the
s are no longer subjected to the chilling
ughts which are productive of directly
effects, especially in the case of the aged
very young; and the other "draughts"
less incisive in character. There is,
ntly, a greater readiness to acquiesce in
less opening of windows, &c., and ul-
a general gain in atmospheric purity and
. The only loss suffered is that of a
f the cold stratum of air which previously
o the fireplace below knee-level, and, as
ver available for respiratory purposes by
eings in an ordinary posture, it calls for
. The plan is occasionally seen in opera-
he living-rooms of private houses—often
adopted as a cure for the previously
ely smoking chimney—and it is an ex-
f real value when older existing build-
e to be adapted to use for scholastic pur-
n undertaking which can but very seldom
led with more than moderate success.

reater part of the chapter on the pro-
f school buildings from fire appeared in
s of The School World some two years
One of the great dangers of fire lies in
aratively rare occurrence"; and that, as
will admit, is particularly true of schools,
he many risks which accrue from the
proclivities and the innumerable oppor-
peculiar to the schoolboy; and although
might be supposed to be the last place
rule and discipline should so run to seed
rmit protective apparatus to become de-
d useless, and precautionary drill and
n to fall into desuetude after the waning
enthusiasm. Hence the importance of
constructive details, and no less of con-
vatchfulness in order to secure the peren-
ency of protective methods. Special care
ed when bedding, &c., is being "aired"
re the beginning of a term, although the risk of serious disaster involving loss of life is, of course, much less at this time.

Precise details with regard to the construction and maintenance of school infirmaries and sanatoria are rightly regarded as belonging more to the subject of hospital than of school building. But a point might be made of the importance of providing an adequate playroom for convalescents from illness, constructed and arranged *ad hoc*. It should be of sufficient size, airy, well lighted, and with a sunny aspect, so placed that its inmates may be under proper supervision, while unable to communicate directly with the outside world, and sufficiently removed from the sick-wards to allow of even noisy play being indulged in without subjecting those who are ill to discomfort.

In conclusion, it may safely be said that the present edition of this handsome book worthily maintains the reputation which was so speedily achieved by the first.

MR. CHURTON COLLINS AS A CRITIC.[1]

WE have read this book with interest. Mr. Collins is not of the select few whose criticism penetrates and illuminates once and for ever, but he is a pleasant companion, with a catholic taste in letters, gentle with the minor poets, and appreciative of their major brethren. The papers contained in this volume are above the average of those which appear in the critical journals, and if they do not deserve immortality, most, if not all, deserve to be republished. Mr. Collins holds an equable balance: he is just, with a slight inclination towards mercy. His estimate of his contemporaries, if we may judge from the essay on William Watson, is a little higher than the truth; but he does not use indiscriminating eulogy. Mr. Watson's narrowness of scope is, perhaps, hardly made clear, and posterity may not quite endorse the high estimate which is here given of his work. But Mr. Collins is right in dwelling on the nobility of Mr. Watson's ideals, and of his expression and style; while he suggests an explanation of his somewhat melancholy tone which is new to us, and seems likely to be true: that Mr. Watson is the true poet, struggling against sordid surroundings which make the highest poetry impossible. Impossible, of course, that is, to any but a transcendent genius; but although the genius does sometimes arise as a freak, that is rare, and circumstances generally lead up to him.

An essay on the "Poetry and Poets of America" will contain much that is new to English readers. In view of this fact, we wish that Mr. Collins could have quoted more. There is no use in strings of names, when the names have never been heard of before, whether poems or poets. We are glad to see a true and courageous word said of Walt Whitman, in view of which

1 "Studies in Poetry and Criticism." By T. Churton Collins. x. + 309 pp. (Bell.) 6s. net.

we wish Mr. Collins would turn his cool analysis on Ibsen. The estimate given of Lord Byron is not quite so clear or convincing as some other parts of the book, but it is interesting. "Miltonic Myths and their Authors" is a misleading title. It really refers to mistaken beliefs about Milton and his works, and the paper contains some amusing stuff.

In the last two papers, Mr. Collins aims at something higher than the rest of the book. In "Longinus and Greek Criticism" he traces the influence of Longinus in England—which, oddly enough, is hardly to be found at all in the nineteenth century—and discusses critical questions connected with the works which bear his name. This is a scholar's theme rather than one for the literary critic, but it is clearly treated in a popular way. When he comes to the matter of the treatise "On the Sublime," Mr. Collins rises to something like enthusiasm. Well is it deserved, and we hope that he may direct many readers to this, the noblest, perhaps, of all books on literary criticism. The last essay, "On the True Functions of Poetry," attempts a subject often attempted without success. Mr. Collins collects a number of proposed definitions of poetry and of remarks about it. His own remarks are full of truth and good sense, and show none of the modern cant about "art for art's sake." He sees for himself, or Longinus has taught him, that the form cannot be separated from the matter. He might have said that perfection of form with utmost degradation and meanness of matter is not poetry but devilry. We have to thank Mr. Collins for his book; it is worth reading.

THE BEST ARRANGEMENT OF THE SCHOOL DAY.[1]

By H. B. TRISTRAM, M.A.
Headmaster of Loretto School.

IN opening a discussion on such a subject, I am rather afraid of seeming to emphasise the obvious, especially as, never having availed myself of the privilege of taking part in such discussions before, I am not quite sure what is obvious and what not. But I think it is, in any case, better to risk repeating the commonplace than to omit any essential details.

And one other word of preface. My experience has been entirely of boys and boarding schools, and so I naturally speak of them. Home work belongs to day schools, and I must leave others to speak of that. But I think there is little in what I am going to say that will not apply equally to girls as to boys.

Now, in all our relations in life, it is well there should be a constant reference to first principles; and so I lay down this as the great first principle on which I found my scheme—that in education, considerations of health are paramount; and I think few who have had any practical experience will dissent from it. Then I deduce directly from this three fundamental rules: first, that boys must have plenty of time for sleep; secondly, they must have exercise in the fresh air in daylight every day; thirdly, the hours of work, both mental and physical, and of meals, should be arranged in mutual relation.

Now, I suppose we here are aiming at coun fection, but perfection is very hard to attain. must be no doubt that it is what we are aimin test by which we are to try our system is n convenient, and what works, but what is rationa is right. And then too often we are brought up what is possible, and we have to be content disappointing compromise.

I am not going to say much about the arran the school year. I believe in three terms of m equal length; and, so long as Christmas is reg necessary time for holidays, I do not see that w much change from what is customary at pres will say this much: the summer holidays ough longest, for boys and girls to have plenty the open air, and lay up for themselves a stor against the coming winter; while the Christm should be the shortest, for that is a time when and unwise feeding and late hours do a great de and boys generally come back to school after the in poorer health and condition than at any Having said that much, I pass on to the arran the school day, beginning at the beginning.

I am not a believer in school before breakfas know a great many, with far more experience t see nothing but good in it. I have had a fair both as boy and master, and I believe it to be for many colds and much ill-temper. At Winche day, a glass of milk or a cup of something starting was unknown; and though such things gate the evils of early school, I am rather doul wisdom of breakfast by instalments. In some s is in vogue a custom of making early school preparation time. The convenience of this is when day boys and boarders have to be worked a but I think it is the worst time in the day for work. Preparation is (or ought to be) the ha that a boy has to do; and, at the beginning the brain has not got into working order, and is or agile enough. I have known it given as a this arrangement that ordinary school was too gr on the master at such a time. Such a plea is, ridiculous. What is bad for the grown man i must be worse for the growing boy. In summ it is different. Boys do not require so much may well get up earlier when the mornings are light. But, even so, I should still advocate school before breakfast, but breakfast and dinn earlier than in other terms, and any extra sch put in later in the day.

In the two winter terms, if we have no earl is easy to arrange for breakfast about eight an one. This will give from three to three and a in school in the morning, allowing for three-qua hour in the open air or for some form of physic and shorter intervals between the different sch But boys are hungry animals, and a well-spe is hungry work; and if boys are to keep going the time, in most cases they will probably need to eat before dinner-time arrives. If a school to feed a boy, it is bound to give him what fo sary to keep him in the robustest health; an most strongly against a system which allows encourages—boys to buy various forms of sweet satisfies their hunger for the time, but spoils t afterwards. A plain biscuit or a piece of bread is required, and a boy ought to be able to get

[1] An address delivered in opening a discussion on the subject at the *13th Conference of the* Teachers' Guild held at Sheffield in April, 1906.

it without having to buy it. Some schools use the before dinner as the chief time for exercise and games. I suppose such an arrangement has the on of the medical officers concerned, or it would continued; but I am surprised at it, for, to me, it genuinely bad. I do not speak without experience; e been through the mill myself. Out of school at ; a rush up to the house to change; down to the ll ground for a game of some fifty minutes or so; o the house to change and wash, so far as possible, dinner at half-past one. After a morning like that ought to have been hungry enough; but on those ny dinner was a mockery: I could not do justice to d other boys were the same; they could not eat a dinner so soon after hard exercise. And I was lad when, a short time after I entered the profession, instrumental in getting a longer time for our own etween football and tea by getting the tea-hour put nd having an hour's school before it.

day dinner I take for granted, and I think it is And then comes that very difficult time immediately inner—not good for hard work, either of brain or But there are some subjects which are no great on either brain or body, for which it is often diffi- find time in a crowded scheme, such as music, , and, to a certain extent, choral singing. Of there are several boys who do not take these sub- t it ought not to be impossible to find some pursuit r boys which is not only interesting, but also useful. having tided over this critical time in some such e then come to the middle of the afternoon, the me for that daily exercise which I put down as ecessary. This is not an occasion to discuss what rcise should be; the great thing is that every boy ave some. But in arranging it we are beset by s. Day boys cause terrible complications. For venience, school is crowded up into the early hours fternoon, and they often go away immediately without joining in the school games, even though y have the exercise entailed in walking home. gain, many boys may not play football; some may less violent games. But if schools are to do their ey must find for each boy the exercise that is him. We do not want the same form of exercise y, but we want *some* form of exercise every day; only school authorities, but parents as well, must that the physical training of the human animal the period of growth is an integral part of educa- d must be recognised and enforced in the system y school.

proper position of athletic games in schools is a teresting question, but I cannot enter on it now. will say, in passing, that, after a fairly wide ex- e, I have come to the conclusion that the old style by football is superior to all other games in value. it may not be the ideal form of hard exercise, it gnificent training, not only physical, but also moral. e exercise is nothing much more than walking, boys sily go straight into school for two hours' work; they have been doing something hard they will a little time to recover, and a mouthful of some- If they are to do themselves justice in school. Then, ea about six, we have an evening before us which adapted to any requirements.

fternoon school in the summer is a difficulty which faced. If boys have been knocking about for an l a half or more in the hot sun, they will be very hen they go into school. I have before suggested summer, breakfast and dinner should be an hour earlier. This will give us dinner at twelve, and afternoon work can be got over by four. But care must be taken that boys have no chance of getting over-heated or tired between dinner and school. The class-rooms must be kept well aired, and please allow (or, better still, compel) boys to take off their coats in school in hot weather. The boys will be fresher, and the work will be better. Some people say that such a novelty—if it is a novelty—will upset discipline and rob the schoolroom of dignity. The novelty will remain a novelty for two days, and will then be regarded as a rational custom; while the discipline and the dignity which depend on a coat are not worth much in the rough and tumble of the world. If we have done a fair afternoon's work by four, we have the cool of the day for out of doors. But growing boys and girls need a great deal of food, and I think it would probably be found necessary to have two light meals, one at four and the other about seven, with preparation after it. Such an arrangement allows for anything from six to eight hours' work in the day, and though it may perhaps be inconvenient, we must remember that we are not thinking of what is convenient, but of what is rational.

As to the hours of sleep, the doctors have spoken, and with no uncertain voice, and they do not seem to have disagreed. Here and there a schoolmaster has protested that they have interfered unnecessarily or ignorantly, but, for the most part, the profession has either accepted their decision or said nothing. Those among us who find that we have been satisfying the demands of the faculty may congratulate ourselves. Those among us who have fallen short had best set their house in order as soon as may be.

I am not going to say at what hours the various subjects should be taken; that is for each Principal to decide for himself, and much depends on what he considers the main object of the work in the schoolroom. I take it there are three main objects: first, to impart some useful information; secondly, to teach boys to use their brains; thirdly, to make them love learning. These three aims are very different, and perhaps belong to different periods of intellectual growth; at any rate, the process in each case is very different, and great (as well as fortunate) is the teacher who can succeed in all three.

Such, then, is a sketch of my programme for the day, and I hope it does not sound too heretical or impracticable. Whatever its inconveniences and whatever its weaknesses, there is one pitfall which I have tried to avoid, a pitfall in which lie lost and buried so many ideas which seemed so excellent, and so many schemes which promised so well—I mean the mistake of making all our arrangements to suit the boy as we think he ought to be, instead of the boy as he is.

COMMERCIAL EDUCATION IN JAPAN.

By Takeo Nishi,
Professor at the Commercial School, Nagoya.

The commercial educational institutions in Japan are:—(1) the Easy Commercial School; (2) the Ordinary Commercial School; (3) the Higher Commercial College.

(1) Easy Commercial School.

The easy commercial schools are established in large cities, and they are supported by the municipalities. The course of instruction extends over three years. To the first-year class of the school, any boys who have completed the primary-school course are admitted without an entrance examination. Such boys are generally ten or eleven years old.

The courses of study are as follows :—

First Year.

	Hours per week.
Commercial morality	1
Reading, writing, and composition ...	10
Commercial arithmetic...	5
Commercial usages and legislation ...	2
Geography and history of Japan ...	4
Natural history	2
Drawing	2
English	2
Gymnastics	2

Second Year.

Commercial morality	1
Reading, writing, and composition ...	9
Commercial arithmetic...	5
Bookkeeping	2
Commercial usages and legislation ...	2
World geography and history... ...	4
Physics and chemistry	2
English	2
Gymnastics	2

Third Year.

Commercial morality	1
Reading, writing, and composition ...	10
Calculations with the abacus... ...	6
Bookkeeping	6
Practice of commerce	3
English	2
Gymnastics	2

When the students finish their studies in the school they are about thirteen years old on the average, and they mostly enter companies' offices, banks, or private stores of great merchants as apprentices, getting a small salary. Besides this, a few boys engage in the commercial business in their fathers' stores, and the fewest of all enter the ordinary commercial schools.

(2) Ordinary Commercial School.

Ordinary commercial schools are established and supported by prefectures or cities, but there are some which are established and supported by private persons. The course of instruction extends over one year in the preparatory course and three years in the principal course. Sometimes a post-graduate course extending over one year is established. To the preparatory course, any students who have finished the primary school or the easy commercial school course are admitted. Such students are generally thirteen or fourteen years old.

The courses of study of the ordinary commercial school are as follows :—

Preparatory Course.

	Hours per week.
Commercial morality	2
Writing and composition	7
Arithmetic and calculations with the abacus	5
World geography and history... ...	2
Physics and chemistry...	2
Drawing	2
English	7
Gymnastics	3

Principal Course: First Year.

Commercial morality	2
Reading, writing, and composition...	6
Commercial arithmetic and algebra...	5
Commercial geography and history...	2
Bookkeeping	3
Commercial usages and legislation ...	2
English	8

Second Year.

	Hour
Gymnastics	...
Commercial morality	...
Reading, writing, and composition ...	...
Algebra and geometry	...
Elements of political economy... ...	...
Bookkeeping	...
Commercial products	...
Commercial usages and legislation ...	...
English	...
Gymnastics	...

Third Year.

Bookkeeping	...
Elements of political economy and statistics	
Commercial usages and legislation ...	...
Jurisprudence, civil law, and commercial law	...
English	...
Gymnastics	...

Post-graduate Course.

Political economy and statistics ...	...
Commercial law	...
Commercial usages and legislation ...	...
English	...
Gymnastics	...

Graduates of the ordinary commercial school become business men. They enter the employ of c banks, or enter stores of great merchants a getting the average salary of fifteen yen (thirty a month, and they are confidential servants. there are some who engage in commercial busines fathers' stores, and some who enter the higher co college.

(3) Higher Commercial College.

There are three higher commercial colleges country, all of them being supported by the centra ment. The sites are Tokyo, Kobe, and Nagas course of instruction is six years in all—one ye preparatory course, three years in the principal co two years in the post-graduate course. Any stud are more than seventeen years old, and who also at the middle school or the ordinary commercial s admitted into the preparatory course of the hig mercial college after undergoing an entrance ex in the following subjects :—

(1) Reading, writing, and composition.
(2) Mathematics.
(3) English.
(4) Bodily examination.

The following is a specimen of an entrance ex in English held at the Commercial College of 1905 :—

English into Japanese.

(1) It is just possible, no doubt, that a young r at the outset of life, mistake his calling; in t the sooner he changes it the better.

(2) Do one thing thoroughly rather than mai indifferently; stick to your present post, young n a better one opens up. Mind your business, or i mind you.

(3) I cannot too much impress on your mind th is the condition which Nature has imposed on us station in life; there is nothing worth having th had without it.

(4) Our officers and crews are highly experie disciplined, to say nothing of their patriotism an upon which we depend more than on weapons.

Japanese into English.

benefit of foreign readers, the English trans-ven.)

'e studied German these three years, yet I can te nor speak it with ease.

: war continue for two or three years more, our ı afford the expense easily.

es without saying that, after peace is restored, rce between Japan and Corea will make a re-levelopment.

Beppu, who has long been studying English t the Oxford University, returned home, arriving the evening on the day before yesterday by the *ttsu*.

rses of instruction of the higher commercial as follows:—

Preparatory.

	Hours per week.
mercial morality	1
ıanship	1
mercial correspondence	2
ıematics	3
:keeping	3
ied physics and chemistry	4
prudence	2
omics	1
ish	9
nd foreign language (elective)	3
nastics	3

Principal Course: First Year.

mercial morality	1
mercial correspondence	1
mercial arithmetic...	2
mercial geography...	2
keeping	2
anical engineering	1
mercial products	3
omics	3
ıte laws	3
ish	6
ıd foreign language	2
ıce of commerce	2
nastics	3

Second Year.

mercial arithmetic...	3
mercial geography...	2
keeping	2
omics	3
ıtics	1
ıte law	3
sh	6
ıd foreign language	3
ce of commerce	7
ıastics	2

Third Year.

mercial history	3
keeping	1
omics	3
ıce	2
te law	3
rupt law	1
nistrative law	1
national law	2
sh	6
ıd foreign language	3
ices of commerce	5

Post-graduate Course: First Year.

	Hours per week.
Economics	4
Civil law	2
Commercial law...	2
Lectures on the economic conditions of the East	2
Criminal code	2
English	2
Second foreign language	5

Second Year.

Economics	4
Civil law	3
Commercial law...	2
Politics	2
Modern diplomatic history	2
English	2
Second foreign language	5

The number of graduates of the colleges since their establishment amounts to 1,550 in all. Of this number, some 200 are engaged in banking business, 400 are in companies of several kinds, and 150 have become teachers of ordinary commercial schools. The rest include those who are officials in the Government, or are engaged in commercial business on their own account. Of the graduates of the post-graduate course, there are some who are consuls or diplomatic attachés of the Japanese Legations in foreign countries. The average age of the graduates is twenty-three years and seven months.

Such is the tale that Japan can tell of its achievement in the direction of commercial education.

HISTORY AND CURRENT EVENTS.

"THE Government are resuming the work of the Tudors and Stuarts: they are seeking to subordinate the religion of individual citizens to the supposed needs of national policy." "I hope we are not going to revive the quarrels of the seventeenth century between the public and Churchmen. . . . In this affair, at this moment, if they are so unwise as to force the thing to a rough and furious quarrel, I do ingeminate peace." Our statesmen are evidently reminded, by current events, as these quotations show, of our ecclesiastical quarrels three hundred years ago. The opposition to the Education Bill thinks the Government are imitating the Tudors and Stuarts. Mr. Morley is consciously comparing himself with Lord Falkland. We are reminded of another period of our history, when men's minds harked back to the Stuarts. When George III. was struggling during the first twenty years of his reign to overthrow the Whig oligarchy and to reintroduce methods of personal government, he was often compared by his opponents with Charles I. Our elastic constitution is always subject to strains like these.

THE seventeenth century in England was a period of ecclesiastical strife. It was then assumed by all but a very few that the religious education of ***adults*** was a matter of State concern. Roman Catholics, English Catholics, Puritans and Separatists, all strove for the mastery. There were advocates of dogmatic teaching, and advocates of Bible teaching with simple explanation. At first the Anglicans or English Catholics had the mastery under Laud. Then there were passive resisters, such as Hampden. Later, the advocates of Bible teaching attained to power, and, under Cromwell, the basis of the national creed was "the Scriptures," and toleration was allowed to all Protestants, but not to "Papists or Prelatists."

Later again, the Anglicans came into office with the "Restoration," and, in their struggle against James II., were glad of the help of their Puritan enemies. Finally, in 1689, the moderate Anglicans won, and "tolerated" their Protestant allies. Whether this has any parallel with "current events," let our readers "devine," "for I ne dar, bi dere god in heuene."

OUR cousins in the United States of America are thinking of altering their constitution. Some of them have proposed to have the election of Senators effected by the direct vote of the people, and to make the life of Congress four years instead of two. There was once an English parliament that thought English parliaments should live for seven years instead of three. And they carried out the change without consulting the people, even lengthening their own political existence. That was quite legal, though perhaps not "constitutional," *i.e.* not usual. The American Congress can do no such thing. It takes much more than their wishes to effect such changes as these. Senators are chosen at present by the State legislatures, two for each State. It is interesting to study the causes which led to this peculiar arrangement in 1789. Why is there a desire for change? And, considering that the American constitution has never been altered, except in times of great stress, is there any chance for these proposals in "piping times of peace"?

LORD CROMER'S Egyptian reports are always well worth study, not only for the information he gives us on the condition of that land, so strangely situated both geographically and politically, but also for the words of wisdom which they contain. He has no public audience to study. He need, therefore, never use the word "liberty" to evoke a cheer, nor has he need to fear an adverse vote. English people know too little of Egypt to be able to form an opinion on Lord Cromer, and therefore willingly leave him to his appointed task. From his last report we cull this bit of political wisdom: "There are some things which no Government, whatever be the means of which it disposes, can successfully accomplish. There are economic laws which invariably override the wishes and the regulations of any Government. There are limits to the protection which it is possible to afford to an individual against the consequences of his own folly. . . ." Is what is true in Egypt and the Sudan untrue here? Is not the history of economic legislation strewn with the wrecks of statutes stillborn, or repealed soon after their enactment?

ITEMS OF INTEREST.

GENERAL.

THE Education Bill, 1900, was read a second time in the House of Commons on May 11th. An amendment for the rejection of the Bill was negatived by 410 votes against 204. At the time of writing this note, the amendments handed in for consideration during the committee stage of the Bill fill thirty-two printed foolscap pages.

THE announcement made by Mr. Acland at the general meeting of the British and Foreign School Society on May 18th, with regard to grants for training colleges, will meet with warm approval from all educationists. Mr. Acland said that Mr. Birrell had informed him that the sanction of the Chancellor of the Exchequer has been obtained for an undertaking that the Board of Education may now initiate an important new system of building grants, to enable local authorities really to organise, individually, or perhaps more frequently by co-operation, a proper system of training-college provision. Mr. Acland said he understands that the new grant will t of the existing building grants, and will amou ment to the local authority each year by th of 75 per cent. of the interest and sinking fu of any loan that the local authority may incur a new training college. There will, of cours checks and conditions to be fulfilled by the aut will be seen as soon as the new regulations ar

REPLYING to Mr. Lehmann in the House on May 9th, Mr. Birrell stated that, so far as regulations of the Board of Education for mentary grants in respect of secondary sch school is eligible unless it admits day scholar a full conscience clause, and (2) no restric kind are laid down in regard to the teaching that of educational efficiency; while (3) each have a governing body constituted in a man by the Board, upon which in the majority o is some representation of the local authority, is not yet laid down as an invariable con regulations. (4) With the exception abov current regulations of the Board, being drawn with the principles of existing legislation, dc the Exchequer grants to such secondary sch no denominational or undenominational rest pupils or staff; and schools of very varying respect, some with and some without the c referred to, are at present on the list of State-ary schools.

CONTINUING, Mr. Birrell said that "as re in aid of secondary schools from the rates taxation fund, a local authority is precluded by of the Act of 1902 from requiring 'that a form of religious instruction or worship, or cathechism or formulary which is distinctive ticular denomination, shall or shall not be tau practised in any school, college, or hostel a provided by the Council.' I am not aware religious distinctions which a local authority precluded from making."

THE concluding question of Mr. Lehmann, Government contemplates, by legislation or secure that after a certain date grants shall t to schools in which there is no denominatior cation for teachers or pupils, and are subje control, met with the following reply:—T policy raises problems of grave importance, a receiving the serious atttention of the Govern authorities have as yet themselves provid schools to a very limited extent, and in man great reluctance to incur rate expenditure in t and the large number of efficient secondary s would be affected by the proposal are in ne greatly needed at present for the supply education in their respective districts. "I a not yet prepared to state that they could, v imposing a burden on the ratepayers wh apparently unwilling to accept or without serious a loss to our existing educational henceforth deprived of those public moneys depends in almost all cases their efficiency, their very existence. And this is the case, a question merely of the cessation of the l grants, which is a matter of departmental r further, of the prohibition of all local grants would, of course, require legislation. I may number of secondary schools which, takin

subject to full popular control and presumably
enominational disqualification for teachers or
I believe, not more than eighty schools out of
f some 500 State-aided secondary schools, so
land (apart from Wales) is concerned, and, so
s is the case, any Minister responsible for the
ducation of this country must deliberate very
fore adopting the policy to which, but for these
he might unhesitatingly adhere."

hers' Registration Council has adopted a resolu-
ret "that the only proposal of the Education
gard to teachers' registration should be one of
the present register rather than of reconstruc-
strongly urges that such abolition should be
ntil further steps have been taken to ascertain
ity of framing a comprehensive register of
re generally acceptable to the whole profession."

rd of Education has recently issued a revised
lding regulations for secondary schools, which
nmenting upon as being a considerable improve-
egoing issues. A prefatory note sets forth the
limitations of the regulations, pointing out their
odification when applied to the alteration of
ldings, and indicating a desire to give friendly
nd to consider individual cases on their merits.
ls with the dimensions of rooms and school
ich are to be complied with or aimed at as
es may warrant. Part ii. deals with matters of
and sanitation, and part iii. with the formali-
bserved and drawings required in making appli-
he Board. Parts ii. and iii. may perhaps be
the architect, but part i. should be carefully
school managers who contemplate building, as
architect is put in possession of definite and
ought out requirements, much time will be
ay, and no satisfactory collaboration can be

nges in the dimensions of rooms as are now
y the Board of Education are in the direction
A very important concession is the reduction
required for the central hall from 8 to 6 square
d, a decrease of 25 per cent., which will make
preciable difference to the cost of building, and
d through the instrumentality of a body often
d on the score of extravagance. The area re-
lass-rooms will also be found to have been
uced in circumstances in which it is found
provide the usual allowance of 18 square feet

considered scheme for encouraging and assist-
methods of teaching in our schools is to be
We have pleasure in directing the attention of
English subjects to Mr. Coxhead's letter on
ibing steps which are being taken to inaugurate
association, the objects of which are to bring
advocates of improved methods of teaching the
guage and literature and to co-ordinate and
eir individual efforts. It is true that many
with similar objects so far as other subjects
d, already exist, and that concentrated attention
ns of a single subject is apt to result in a
to underestimate the value of other branches
Yet, until a society is formed for the scientific
ducation as a whole, these "subject associa-
Mr. Coxhead calls them, can do valuable work,
and it is to be hoped that the new association will prove successful in securing for "English" the place in the school curriculum to which it is justly entitled.

THE *Times* report on the book-prizes in London County Council primary schools points once more to the necessity for periodical revision of such lists. It is not clear from the report of the Education Committee whether or no the head teachers have made up the lists, but we must assume that this is the case. Surely there can be no difference of opinion regarding the unsuitability of the "Origin of Species," "Ingoldsby," and a complete Byron; while "Hypatia" and "Peter Simple" may well be omitted. But there seems to be no principle on which the list is made or revised. It looks as though the revisers were neither asked nor allowed to suggest any books: their function is expurgatorial only. Where are Hughes's "Life of Alfred," Jacobs's and Lang's "Fairy Tales," Yonge's "Golden Deeds," the "Boy's Froissart," the "Boy's Malory," Kinglake's "Eothen"? and where are the beautifully illustrated editions of "Old Christmas," "Bracebridge Hall," "Our Village," and many other good books? Would it not be better for the L.C.C. to print and issue a long list of suitable books? or does the difficulty lie in this, that the majority of prize-choosing people, not having read many books, fall despairingly back on "Robinson Crusoe" and the "Wide, Wide World"? or again, is it that the choice of suitable books and the application for them are left to unsuitable persons? At all events, even the revised list is unsatisfactory.

THE proposed changes in the mathematical tripos at Cambridge should exercise a most beneficial effect, not only on the study of mathematics, but also on the schools of natural science and engineering. Schoolmasters who have had to do with boys intending to take the mechanical science tripos will be specially grateful for the change. Such boys are occasionally good at mathematics, and would benefit greatly by a preliminary course in that subject; and yet it has been impossible to advise them to take the mathematical tripos unless they could spare two years. The proposed part i. provides for such boys, and their last year at school should obviously be devoted to mathematics and physics. The benefits which the scheme confers on students of natural science and engineering are pointed out in the report issued by the Special Board. But another merit of the scheme is that it provides a much sounder training for the average schoolmaster than has hitherto been obtainable. Men who have in the past taken the mathematical tripos, and then have devoted one too short year to natural science, will recognise with envy the advantages of a system which allots one or two years to mathematics of a serviceable kind, and at least two years to science. The new part i. includes all the mathematics necessary for the ordinary teacher, and if it is followed by the natural science tripos, with plenty of time to read for it, no better training could be desired. At present, some mathematical masters know no physics, and some science masters know no mathematics. This undesirable state of things need no longer exist for Cambridge men, if the Senate recognises the merits of the scheme.

THE Board for the Extension of University Teaching of the University of London is arranging a holiday course for foreigners, to be held in London, in July and August, 1906, under the direction of Prof. Walter Rippmann. The full course will extend over four weeks, from July 16th to August 10th, but students will also be admitted to the first or second fortnight only. The course is planned in such a

way as to be of special value to teachers in Lycées, Collèges, Gymnasien, Real-Gymnasien, Realschulen, and other schools of the same type; but it by no means appeals only to this class of student. Those who propose to attend the course will be expected to have a fair knowledge of the language, and to have made themselves familiar with the mode of transcription adopted by the Association Phonétique Internationale. Arrangements cannot be made for students who are only beginning the study of English, and have no conversational knowledge of the language. Attention will be devoted mainly to spoken English and to English life and ways. To this end there will be lectures and classes. The director will be glad to see students at the University, South Kensington, on July 14th, between 10 and 5. Work will begin on July 16th, when Sir Arthur Rücker will deliver the inaugural address.

In his report presented at Presentation Day of the University of London on May 9th, Sir Arthur Rücker, the principal, said that the number of candidates for matriculation continues to rise. In 1904–5, 6,666 entered and 3,287 passed; in 1905–6, 6,799 entered and 2,868 passed. In other words, the percentage of failures, which was 50·7 in the former year, rose to 57·8 in 1905–6. Sixty-six holders of Cambridge senior local certificates and twenty-six of Oxford senior local certificates were excused matriculation during the year. A Higher Standard school examination has now been established, so that by means of this, of the ordinary Matriculation Standard examination, and of the Junior Standard examination, it is hoped that the University will be able to meet all the requirements of schools. The Middlesex County Council has invited the University to inspect and examine all the secondary schools under its control. It will be remembered that last year a similar action on the part of the Surrey County Council was reported. The total number of schools inspected or examined increased from twelve in 1903–4 to forty in 1904–5, and will probably amount to forty-five in the session now drawing to a close.

A CONFERENCE was held on May 5th at University College, London, to debate how best to introduce a more general study of Shakespeare into elementary and secondary schools. Dr. Kimmins, who presided, thinks it is of importance to take carefully into consideration the marvellous natural romantic instinct of young children, and see how best to take advantage of it. It is a melancholy fact that in many cases the first introduction which a boy or girl has to Shakespeare in the school is that of reading up a play, together with copious notes, for examination purposes. Prof. Gollancz said the question is how Shakespeare can best be made a real living and happy possession of all the boys and girls who attend school. He read a letter from a master in a secondary school who said that he knows a master who always sets his imposition in Shakespeare, and the boys spend their wet evenings in writing out "Macbeth," and sell the manuscript to their comrades at one penny per hundred lines.

MR. MORLEY has consented publicly to present, at the rooms of the Royal Asiatic Society, on June 19th, the third Empire of India medal, now granted annually by that society to encourage, at the great public schools of this country, an interest in India and Indian history. A book prize is given annually at each of the schools selected for this purpose for an essay on a subject chosen by the council of the society, the award being made by the school authorities. The winning essays are then sent to the council, and the one judged by an examining committee to be the best is awarded the medal. On this occasion the honour has fallen to the representative of Rugby, L. I subject set for competition being "The Life Haider Ali, of Mysore." Four additional sch admitted into the list of competing schools, stricted to seven. They are Marlborough, School, the Perse School, Cambridge, and G

THE annual conference of the Associat mistresses will this year be held at the (School, 63, South Side, Clapham Comm June 8th and 9th.

THE third annual conference of the Girls' Union, the object of which is the advance in secondary schools for girls and the discus connected therewith, was held on May 5th. present from all parts of the country. Cummings, principal of the Guildhall Sch presided in place of Mr. W. H. Hadow, the was unable to be present. Miss Cecilia H honorary secretaries, read the annual report committee express themselves satisfied with t of the union, and point out that improve shown both in the number of members a position. The scheme for providing schools of educational value has been very successfu of the formation of a lending library is unde Mr. W. H. Hadow was re-elected president year. Dr. Cummings dealt with the ques Training of Taste." Papers were read b Daymond, on "Practical Methods of Teachi Harmony in Schools," and by the Rev. E. H "Some Thoughts on the Teaching of the Schools."

A DEPUTATION of the Council of the Assoc nical Institutions was received by the Pr Board of Education on May 4th. Sir Will president of the association, introduced the stated that its object was to bring before importance of increasing the rate of gran technical institutions and for instruction in nical subjects in evening classes. Sir Philip the importance of technological subjects in and the great cost involved in their mainte education authorities are encouraged to condu there is, he said, grave fear of their being subjects, not so important to the industries which receive higher grants. Principal R Wertheimer, and Principal Wells also spoke to show the great cost of the equipmen technical institutions as compared with schools. Sir William Mather urged the technical education for the maintenance of t the country, and thought an appeal might to employers to contribute towards the co education. Mr. Birrell, in reply, said that might rest assured that the Board has with the request put forward for increased in day classes in technical institutes. T realises the importance of the work which Birrell, however, reminded the deputation many other important branches of educa in need of increased grants, and cordially Sir William Mather had said as to the employers contributing to these institutes.

MR. BIRRELL, when opening the new c Acton recently, gave governing bodies some as to how headmasters should be treated.

rom his remarks will indicate the views of the
f the Board of Education :—Headmasters must
to be captains on their own quarter-decks.
of a school depends on the character, energy,
the headmaster aided by his assistants. Local
cannot influence boys much; headmasters can.
orities, once having chosen their headmaster,
to him, encourage him, support him, and let
s much of his own way as possible. Let them
his authority nor restrict his influence, but sup-
enerously. The work of the school must be
alone.

uence of the success of the Kensington Vacation
Teachers held last August in the Froebel Educa-
ute, West Kensington, arrangements are being
peat it during the two weeks July 30th to
1. As accommodation is limited, early appli-
quested. Applications for prospectuses, tickets,
iries should be addressed to the secretary, Miss
lay, Hadleigh Road, Leigh Village, Leigh-on-

received a copy of a recent issue of the *Feildian*,
rly magazine pertaining to Bishop Feild College
urch of England Schools of Newfoundland."
aster's report for the year ended June 30th,
uded, and we congratulate Mr. W. W. Blackall
llent work accomplished by him and his staff
Feild College.

LTER is arranging another holiday to Switzer-
ummer. The party will start on August 7th,
ised for a fortnight. The time will be divided
indelwald and St. Beatenberg. Grindelwald
o ft. and 4,000 ft. high, is one of the famous
Bernese Oberland, and St. Beatenberg, 3,775 ft.
the Lake of Thun, and commands a wonderful
Alps. The cost of the holiday is about ten
lusive of board and lodging. The route out is
Calais, Basle, and Berne; and the return journey
rienz, the famous Brunig Pass, and Lucerne.
carriages will be reserved from London, and
will be available for twenty-five days for those
rolong their stay. Further information will be
Miss Walter, 38, Woodberry Grove, Finsbury
nd application should be made early, as the
is not organised for private profit, is limited

VIRGO, of Westminster City School, formerly
retary of the Incorporated Association of
sters, has been appointed registrar of the
for Assistant-Masters.

is the last day for application for admission
tition in July for 100 appointments as assistant-
actors). The limits of age are nineteen and
Most of the appointments are in London.
s £55 a year, rising by £5 to £150. This is
y competition limited to boy clerks and boy
whom nearly 1,000 are appointed annually.
e other provision to enable them to obtain
ppointments in the service—the introduction of
rks" allowed in the Excise, Customs, Customs
, and Second Division examinations. Service
ne effective in the Second Division on being
1904; their effect in the other examinations
estimated, but they cannot secure permanent
for more than half the boy clerks registered.
in one year there were 900 vacancies for boy clerks, 200 for abstractors, and 300 in the four branches in which service marks are allowed. If, then, service marks had enabled boy clerks to take one-third of these appointments, only one in every three boy clerks would become permanent civil servants; the other two would have to seek other employment at twenty, an age at which new clerks are not welcomed by private employers.

THE following paragraph from the notice issued by the Civil Service Commission as to the appointments in the Army Accounts and Exchequer and Audit Departments indicates a desire to attract public-school boys into the Service and, perhaps unduly, to smooth their path :—"The following is a provisional list of provincial centres at which the written part of the examination may be held (as well as in London, Dublin, and Edinburgh), provided that the necessary conditions are complied with :—Bedford (Grammar School), Bradfield (The College), Bristol (Clifton College), Charterhouse, Cheltenham (The College), Dover (The College), Eton College, Felsted (The School), Haileybury (The College), Harpenden (United Services College), Harrow (The School), Malvern (The College), Portsmouth (Grammar School), Radley (The College), Rugby (The School), Uppingham (The School), Wellington College, Winchester College. The oral and practical parts of the examination will be held in London only."

SCOTTISH.

THE general report for 1905, by Mr. A. E. Scougal, H.M. Senior Chief Inspector of Schools, has just been issued. It contains no startlingly new features, but there is in it plenty of evidence of the thoroughness and earnestness with which the work of teaching and inspecting is being done. The attendance, we are told, continues to show steady, if slow, improvement. The percentage of average attendance has risen in the Edinburgh district from 87·1 to 87·9, and in Leith from 84·7 to 85·4. During the year attention has been chiefly concentrated on the instruction in arithmetic and English. (One would like to know how the other subjects have fared during this concentration. A high barometer in these subjects is almost certain to coincide with a wave of depression in the others.) A gradual advance is perceptible, and there is abundant evidence to warrant the conclusion that the instruction is gaining in breadth and intelligence. It is pointed out that the percentage of pupils who pass on to the supplementary courses is still far from satisfactory. It is calculated that about 11 per cent. of the pupils on the roll should each year reach the qualifying stage, but the percentage actually attained during the past session was only 6·3 in Edinburgh and 4·7 in Glasgow. Several causes are brought forward to account for this discrepancy between the real and the ideal, but the simplest does not seem to have occurred to the writer of the report, viz., that the ideal has been placed far too high. There is quite evident in the report a desire at all hazards to rush children up to the supplementary courses as if they were the Elysian fields of the elementary schools. Mr. Scougal may be reminded that the root idea of "school" is the Greek σχολή, leisure, and that a feverish haste towards a desired goal, however excellent it may be, is likely to defeat the very object he has so transparently at heart—the sound education of the young.

FOR the second time in its history, Commemoration Day has been observed at Glasgow University. This new and valuable feature was introduced into the academic life of the city two years ago, and the intention is that it should be repeated biennially. Its main object is to commemorate the great names associated with this ancient seat of learn-

ing, and thereby to stimulate the interest of graduates in their *alma mater*. The arrangements embraced a religious service, a discourse on Francis Hutchison (who was professor of moral philosophy in the college from 1730 to 1745) by Prof. Jones, the present occupant of the philosophy chair, and the conferring of honorary degrees. Advantage was also taken of the occasion to present Principal Story with his portrait, a remarkably fine specimen of the work of Sir George Reid. A dinner in the evening brought the proceedings to a close.

THE annual report of the Dick Bequest Schools shows that the total number of schools under the Trust during 1905 was 127. The total number of candidates for capitation grants was 2,309, as against 2,036 in 1904. Of these, 1,611 obtained passes, a very satisfactory proportion in view of the high standard that is required. Prof. Laurie in his report expresses approval of the new regulations for the training of teachers. Dealing with the scarcity of male teachers, Prof. Laurie states that in the schools connected with the Dick Bequest there is never any difficulty in securing well-qualified graduates as teachers. He ascribes this result to the comparatively high salaries that Dick Bequest Schools are enabled to offer to teachers through the operations of the Trust. Many people will agree with the professor when he says that if measures were taken in every rural parish of Scotland to provide a school giving secondary education up to the standard of the Intermediate certificate, the master receiving a salary of not less than £200 with house and garden, and being further secured in an adequate superannuation allowance, many educational problems would be solved in the simplest way and in accordance with the best Scottish traditions.

THE Lord Provost's Committee of the Edinburgh Town Council has had under consideration a letter from the Scottish Education Department on the subject of the establishment of an art school in Edinburgh. The Department hoped the Council, following the procedure of many municipalities in England, would be willing to take into consideration the question of establishing a municipal school of art for Edinburgh. Such a school would be under the ultimate control of the Town Council, but they would doubtless find it expedient to commit the immediate direction of the work of the school to a committee, partly composed of members of their own body and partly of persons well known for their interest in, and special knowledge of, various branches of art. It is satisfactory to find that the Lord Provost's Committee gave these proposals a most favourable consideration. On the general principle of the advisability of instituting such a school, all were agreed. The questions of site, always a thorny subject in Edinburgh, and of finance gave rise to some discussion, but these were departed from meanwhile, and it was agreed to send on the proposals to the Council with their unanimous approval.

THE committee on educational policy and methods of Glasgow University Council has prepared an exhaustive report on the draft regulations for the training of teachers, particularly in regard to their bearing on the scope and character of university teaching. The committee considers that the direct part which the University is expected to play in the training of teachers cannot fail to react on, and strengthen, university life. Thorough approval is expressed of the Department's provision for securing for secondary schools teachers of the highest scholastic attainments, and the committee anticipates a considerable increase in the numbers going forward to an Honours course in consequence of these regulations. Finally, the co siders that the time is ripe for a serious attemp a faculty of education in the University. Th report was submitted to the Council by Dr. Jc convener of the committee, and was unanimou

LORD PROVOST SIR ROBERT CRANSTON pre annual distribution of class medals and prizes i Watt College, Edinburgh. During the past students have been in attendance at the class than £3,000 has been paid in fees. This vol ment in educational classes of the youth of one of the most hopeful signs of the day. I the recognition of the value of education has home to those upon whom the future fortunes o depend. The Lord Provost urged upon the the necessity for a still greater development education, and for this more money will be r trusts education will never result with them as some—in making them snobs. The man whc because he is educated he is demeaning himse his hands to trade is a snob of the first water.

IRISH.

THE rules and programme of the examina Intermediate Education Board for 1907 were the beginning of May—a date of which no c be made. For the first time, the programm mental science, drawing, manual instruction fo ary schools, regulations and syllabus, are bo with the Intermediate rules, thus making on pamphlet. There are not this year any radi but there are, nevertheless, some important The chief is the simplification of the conditior in the junior, middle, and senior grades, and exactly with a suggestion made by the Teache autumn. The group system is abandoned for p they are required to pass in six subjects, (A) English language and literature, (B) Lati or German, (C) one mathematical subject, (D) science, (E) and (F) two other subjects. S have already passed in the two years' prelim in experimental science may substitute for language or a second mathematical subject. likely to give general satisfaction.

ANOTHER group of new rules defines the which exhibitions and prizes will be award absolutely necessary after the dissatisfaction c year's awards and the subsequent revisions ur public opinion. The rules, though complicat will probably work smoothly. They are base is called a standard mark for each grade and is arrived at by taking the average mark of students in each grade and course respective who obtain 75 per cent. of this standard n eligible for exhibitions, and those who obtain will be eligible for prizes; but in either case n one-half and not less than one-fourth of th students qualified in each course and grade exhibitions and prizes. These rules will con for the forthcoming examinations. There will entiation in favour of girls in classics and their standard for exhibitions being 70 per c prizes 60 per cent. For the rest, we observe metry is introduced as a pass and honour s middle grade, that students presenting Latir may be excused experimental science if they ol 20 per cent. of the maximum marks in each

at in the experimental science course in the trigonometry is allowed as an alternative to geometry.

iediate Board has issued notice of alterations able of examinations for this June. Italian are to be interchanged on June 11th, Italian he morning from eleven to one, and Spanish oon from two to four; natural philosophy, iginally fixed for June 25th, is brought for- 11th, and set in the afternoon from two to

ation of Catholic Headmasters at their spring nder the presidency of the Very Rev. Vincent of Clongowes Wood College, and representa- Convent Schools' Committee were present and t was resolved again to urge on the Inter- rd the utterly objectionable character of ting out that it will, beyond all doubt, exclude petitions for medals and prizes some of the es; that it will result in the study of Latin to mere mediocrity, except with boys who ek; that it will operate similarly in mathe- hat it will tend strongly to promote a spurious in the junior grade, where specialisation is everybody. It was also agreed to ask the Board once more to make music an honour pass subject, the pass examination in theory y the inspectors who conduct the practical and the written paper to be a test for to make physiology and hygiene and domestic subjects for girls, as being in a large pro- es more suitable than chemistry or physics.

al of the English Education Bill to abandon as caused a widespread feeling of discourage- econdary teachers in Ireland. A fair number taken advantage of it to put their names on and several schools have paid fees to secure the Board of Education; and it was generally at the first step had been taken towards official adoption of registration for Ireland spect of a genuine profession, the need of generally acknowledged. With this hope in of training for teachers have been started xpected to develop under a broad-minded re- ndary education. A memorial has therefore up under the auspices of the Women's ssociation to beg the Chief Secretary to use o bring about the withdrawal of the objection- which is, after all, no integral part of the

into the working of the Department of Agri- echnical Instruction opened at the end of April t is conducted by Sir Kenelm Digby; the Hon. late Minister of Agriculture in Ontario; icks, member of the Local Government Board Mr. F. G. Ogilvie, principal assistant-secretary in the Board of Education; Mr. Stephen chairman of the County Kildare County Mr. J. J. Taylor, secretary. The first witness ald Balfour, who was Chief Secretary for the Act was passed in 1899 constituting the He was followed by Sir Horace Plunkett, the who pointed out that technical instruction or want of funds, the grants were not high the country was miserably equipped with buildings. He gave it as his opinion that management by unpaid Boards, however zealous, was a failure, and that all Boards must nowadays be managed by paid experts.

THE Department is organising a course of instruction in manual training (woodwork), to begin on September 4th in Dublin and to last for about eight months. It is intended to train persons to give instruction in woodwork as itinerant instructors under county schemes, in technical schools, and in day secondary schools. A limited number of scholarships tenable at this course is offered for competition among artisans and others between the ages of twenty-one and thirty. A scholarship will include free instruction, a maintenance allowance of 30s. per week during the course, and one third-class railway fare to and from Dublin. Candidates must have been born in Ireland or have lived in Ireland for three years prior to July 1st, 1906. The examination for these scholarships will be held in Dublin, Belfast, Cork, and Galway, on Saturday, July 21st. Full particulars can be obtained from the Department, application to which must be made before June 30th.

WELSH.

THE organiser of education for the county of Denbigh considers that a large amount of the £1,200 to £1,500 spent on the evening continuation schools in that county is wasted, for the children come to their further studies with quite inadequate preparation. Mr. Owen Owen, chief inspector of the county schools, holds that entrance scholarships into the county schools should be based on fifth-standard work. Then the sixth and seventh standards could be reserved entirely for those children who do not proceed to the county schools. This would afford better preparation than now obtains for those who afterwards go to the evening continuation schools.

WELSH has now for some time been taught at the Pupil-Teachers' Centre in Cardiff. This seems a necessary step if the future teachers are to get a sufficient grip of the language for teaching purposes. But such study must be continued by the pupil-teachers in the university college to which they go if they are to get a real student's knowledge of the subject. It appears that circulars have been issued in Cardiff to all teachers in the city to ascertain how many of them wish to be taught Welsh in order to become teachers of the language themselves. A considerable number of replies were received, and classes have been formed. The direct method is employed, with a free use of the blackboard and pictures. The method by which the students learn is thus precisely the method by which they will be best able to instruct their own pupils later on.

THE following is a copy of clause 37 of the Education Bill, 1906:—Council for Wales. 37.—(1) His Majesty may, by Order in Council, establish a central education authority for Wales, to be called the Council of Wales, consisting of members appointed by the councils of counties and of county boroughs and of any boroughs and urban districts having a population of over twenty-five thousand, according to the census of one thousand nine hundred and one. (2) In determining the number of representatives to be appointed by each of those authorities, regard shall be had, among other matters, to population and rateable value, provided that the council of each county and of each county borough shall appoint at least two representatives. (3) The Council of Wales shall have power to supply and to aid the supply of education of all kinds in Wales. (4) The following powers and duties, so far as they relate to Wales, shall, subject to such exceptions as His Majesty may make by Order in Council, be transferred to the Council of

Wales :—(*a*) the powers and duties of the Board of Education; and (*b*) the powers and duties of the Board of Agriculture with respect to instruction connected with agriculture and forestry; and (*c*) the powers and duties of the Central Welsh Board for Intermediate Education. (5) The Board of Education shall in each year pay to the Council of Wales any money which may be granted by Parliament in respect of education and science and art in Wales, with the exception of money granted in aid of universities and university colleges. (6) The Order in Council may make provision for the Council of Wales having power to raise any money required by them by means of contributions from the authorities who appoint members of that Council, and for the borrowing of money and acquisition and holding of land by the Council, and for any other matters for which it is necessary or expedient to make provision for the purpose of enabling the Council to perform its duties or exercise its powers. (7) An Order in Council made for the purposes of this section may be varied or revoked by any subsequent order so made. (8) The draft of any Order in Council proposed to be made under this section shall be laid before each House of Parliament for not less than four weeks during which that House is sitting before it is submitted to His Majesty in Council. (9) This section shall apply to the county of Monmouth as if it were part of Wales.

THE British Association for the Advancement of Science has directed the attention of the Cardiff Naturalists' Society to the desirability of taking measures for the protection of the rarer wild plants in the Cardiff district. It has been urged that, owing to the nature-study in the schools, there is a danger of some of the children almost exterminating rare wild plants. The Cardiff Education Committee have resolved accordingly to circularise the headmasters and headmistresses with the object of regulating the teaching of botany so as to discourage the search for varieties. One councillor observed that he was surprised by his own children saying that they were encouraged by a teacher to search for birds' eggs, and then blow and string them and bring them to school. "That teacher," added the councillor, "was not in an elementary school."

THE Merioneth Education Committee have resolved that a wall chart on the effects of smoking on children be supplied to every school in which boys above the age of infants are taught, and that the teachers be requested to direct the attention of the boys to the chart and explain it to them. The committee also have approved the suggestion of legislation to prevent the sale of tobacco to school children.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Rippmann's Picture Vocabulary. French: First Series. (Dent.) 1*s.* net.—This is a splendid idea, well carried out. Ever since the learning of foreign languages began, it has been obvious that the scholar must possess a certain number of words of the foreign tongue. In far-off days (are these so far off in certain schools?) he was compelled to learn by heart long strings of words which had but little connection with one another. This method having deservedly fallen into disrepute, pupils were allowed to pick up what words they could from their reading. But it was found that under this system boys often reached a high form, ignorant of certain very common words of everyday use. Then came the excellent vocabulary of Messrs. Storr and Anderson, which supplied a minimum of words and phrases that no boy or girl ought to leave out knowing. But Prof. Rippmann has coupl with the picture. On the right hand of each o pages of this book we have pictures of cert matters—*e.g.* articles of clothing, the sitting-r contents, the kitchen, games and hobbies, pro hotel, craftsmen—and on the left hand we hav words corresponding to the figures, which The most hide-bound new methodist will not ob this book, for it does not contain a word of En the preface; but it does contain a most usef would be well if each page could be printed sep the French on the back, so that pupils could be examined in their words.

Supplementary Exercises to Dent's New Book. By H. C. Norman. 32 pp. (Dent.) These exercises follow pretty closely along those in the book of which they are the se teachers who find their pupils need additic written work will find them useful. The ques invariably put in the way we should expect a to ask them, *e.g.* on p. 5, "Qu'est-ce que Ch font?" seems a very Anglo-French way of s font Charles et Julie?" There is always a such inelegant forms may remain in the reter of the young. We have nothing but praise f lent way in which this series is printed and bou exercise an important influence on the æsthet the child.

Dent's Short French Readers. (1) *L'Elé* By H. de Varigny. Edited by W. O. Br H. Cammartin. (2) *Contes du Temps Passé.* Edited by G. Heyer and H. Cammartin. each.—Mr. Brigstocke, the popular secretary o Language Association, has not fallen into M error. He has associated with himself a Frer that the notes in these short readers are in exc Messrs. Dent have entered the field of the reader somewhat late in the day, but the result factory. Each of these two books contains 48 and notes, and is bound in limp cloth. T historical and other allusions are in French a of the page, and there are "reform exercises tions in French expecting French answers) or page or so. On p. 1 of *L'Eléphant blanc* t misprints on lines 14 and 17, and on line 1 of

Italian Self-taught. By C. A. Thimm. 12 borough.) 1*s.* 6*d.*—This is the third editio well compiled manual, most useful for those spend some time in Italy and desirous of acq the ordinary phrases of daily life. We improvements in the preliminary notes and ir dealing with correspondence, post-office an money, weights, and measures; there are ne amusements, motoring, commercial and tr religion, and health. The section of idiomati and phrases has been considerably extended. seems to have spared no pains, and we ca commend this book to travellers; even the tea the vocabularies useful.

C. Nodier, Jean Sbogar. Edited by D. L. +113 pp. (Oxford: Clarendon Press). 2*s.*—' careful piece of work, the introduction in pa interesting and well put together. The tale it better suited for private reading than for use i

es peculiar, and sometimes disconcerting; riance of epithets which cloys. The notes y conscientiously; they give all help that is en some that is superfluous. The diligence proof has been read deserves special men- nly noticed *Charities* (for *Charités*) on page eek word without breathing and accent on Savory has added a useful list of Nodier's ooks about Nodier.

ye, Marchand d'Allumettes. viii.+128 pp. s.—This is an excellent story, ably edited. ccount of the author, but the notes are ex- d. There is hardly anything to criticise. In 64 the negative in *Il y a si longtemps que sommes vus* is called "redundant." Why? not equivalent to our "It is so long that we each other"? On page 73 *assiérai* is a mis- *en*) on page 31, line 30, is the only other we he vocabulary is practically complete. In the ranslation into French there are some lapses ve hear for the first time of the existence of otes."

al, La Main Enchantée. Edited by H. H. . (Blackie.) 6*d*.—A good short story, rather rts. The editor supplies a satisfactory bio- duction. In the notes we meet again with our hy subjunctive?", which we thought had dis- ood from the *Little French Classics*. On page that Villon died in 1489—we should like to evidence. *Basochian*, on page 43, is a mis- le about *moins de* and *moins que* is incom- n page 50; would the editor say *Cet homme de deux enfants* for "This man eats less than (eat)"?

Classics.

atin Texts. General Editor, Dr. W. H. D. *r: Gallic War.* Book V., xi.+36 pp., and i.+27 pp. Edited by the General Editor. *micitia*, xiii.+42 pp. Edited by Dr. J. S. *Bucolics.* xiv.+40 pp. *Aeneid.* Book I., Book II., xiv.+28 pp.; Book III., xiv.+ IV., xiv.+25 pp.; Book VI., xiv.+30 pp. E. Wimbolt. *Ilias Latina.* v.+40 pp. H. S. Jones. All 6*d*. each. *Livy.* Book VI. Edited by E. Seymer Thompson. 8*d*.—These are the latest instalment of this series. They for the first two or three years of the study l give a well-printed text accompanied only ical notes at the bottom of the page. They o mark all vowels long by nature, including two or more consonants. The series is a the intelligence of the schoolboy, as Mr. ys Browning's poetry was to that of the , and we are glad to see an attempt to widen his reading by the introduction of the *Ilias* e of easy reading which is an interesting, if accurate, summary of Homer's work. The are to the point, the facts about the authors and tersely put; and it would be difficult, for improve on Mr. Thompson's appreciation of the compass of three small pages. The sec- and MSS. will probably be skipped by most ts, and perhaps this is intended, as in the no quantities are marked. We wish Dr. dded to each book a statement of the prin- ing adopted, and of the rules for long quanti- ties before two consonants. In the absence of this we are puzzled by certain variations which are perhaps only due to insufficient revision, of which we are afraid there is clear evidence. To begin with, the editor of Livy is given as Thomson (*sic*); the introduction to Virgil, the same for all six books, contains mistakes on pp. vii (where MS. F is twice referred to as E), x, xii, xiii, and xiv. It is perhaps only natural that some of the long vowels should in every book escape being marked, *e.g.* in the De Am. the final long *a* of the abl. *amicitia* is overlooked on pp. 20, 26, 27, 28, 34. But the following are more serious: *accĭdunt* (B. G., VI., p. 16), *īdus*, (Livy, VI., pp. 2, 3), *inrĭtae* (*ib.*, p. 50), *utīque* (*ib.*, p. 58). In the Ilias, l. 105, *Omnipotente* seems a mistake for *Ignipotente*, and l. 351, *visit* for *misit*. In Ecl., VI., 51, *quaesisset* is a mistake for *quaesisset*, and in Aen., VI., 222, we have *pars ingente subĭēre ferōtrī*! There is no consistency in the spelling *-vōs* or *-vūs*. We can understand spellings like *servos* for the Ciceronian, and *servus* for the Augustan period, but we cannot understand *voltus* and *vultus* (Aen., I., 684, 710), *volgus* and *vulgus* (Aen., I., 149, 190), on opposite pages. Similarly we have *volnero* and *vulnero* (B. G., V., cc. 43, 58), *tuum* and *tuom* (Ecl., V., 27, 45, 51, 78). Again, on consecutive pages we have for the acc. pl. *hostīs* and *hostes* (Livy, VI., c. 2, §§ 4, 11), and again, *patentīs* (c. 3, § 5) and *abnuentēs* (c. 6, § 5). Nor is the marking of "concealed quantities" consistent; *e.g. intermissio* and *dimisso* (De Am., §§ 8, 12), *nox* and *nōx* (Aen., VI., 539, 866). Some of the markings require reconsideration; the following, which are certainly long, are not marked: *vīxeris* (De Am., § 77), *ācto* (Livy, VI., c. 1, § 4), *iūnctus* (B. G., V., 29); and a good many are marked long which are not recognised by Lindsay or Hale and Buck; indeed, these authorities say some of them are probably short. Here are instances: *cessit* (B. G., V., 35; Aen., IV., 705), *classis* (Aen., I., 310), the first syllable of *cognoscere* (Ecl., IV., 27), *iussit* (Livy, VI., 2), *magnus* (B. G., VI., 3), *misceo* (Aen., IV., 570), *mitto*, *missus* (B. G., V., 39; Aen., VI., 380; Il., 1057), *nox* (Aen., VI., 866), *signum* (B. G., V., 34), *tegmen* (Ecl., I., 1), *ulterius* (Il., 695).

Four new numbers of Arnold's Latin Texts are now before us: *Cicero, First and Second Speeches against Catiline*, and *Horace, Odes, Book I.*, edited by L. D. Wainwright; *Livy, Selections*, edited by R. M. Henry; and *Selections from Phaedrus*, edited by Margaret Brock. Each 64 pp.; 8*d*.—Our remarks on the others apply in general to these. In the *Horace*, the long vowels (except when they are in position) are marked in half of each ode; in the *Cicero* and *Livy*, the long vowels are marked all through; so also in *Phaedrus*. The last book, however, marks the first syllable of *huic* and *cuidam* with a long stroke over both *u* and *i*, which is incorrect, *u* being the consonant. The marking in *Phaedrus* is altogether a mistake, for his verses are scanned on the Plautine system, word-accent being the guiding principle, not quantity. Thus the metrical scheme is misleading, and does not at all represent the way in which the poems were recited. A few omissions have been made in the text of the *Cicero*. *Phaedrus* is provided with some exercises in re-translation. The *Livy* is the best of these books, because it contains interesting pieces of Latin which could not be conveniently got elsewhere for beginners' use.

Xenophontis Opera Omnia: recognovit brevique adnotatione critica instruxit E. C. Marchant. *I., Historia Graeca.—A Commentary with Introduction and Appendix*

on the Hellenica of Xenophon by G. E. Underhill. xcvi.+ 378 pp. (Clarendon Press.) 7*s.* 6*d.* net.—We have already reviewed Mr. Underhill's notes in these pages, and the text of the Oxford edition. Both are here bound together in one volume. The book is fat and cumbrous, and we see no gain in binding the two parts together, unless it be a gain that people are used to the custom. The book is a good one, however, and will prove useful to students, in whatever form they prefer to buy it.

English.

In Memoriam. By Lord Tennyson. 265 pp. (Macmillan.) 5*s.* net.—This volume embodies Tennyson's own notes to his most popular poem. These are not in bulk a considerable addition to the volume, but in literary interest they constitute a remarkable feature. They have been edited by the second Lord Tennyson, who writes an introductory section dealing with the moods and mental attitudes which characterised the great Laureate's view of life, and the problems out of which this poem took its rise. Nobody probably could have done this work better; and we have in these pages a valuable contribution to our knowledge of Tennyson's personality. To many of the notes left by the poet the second Lord Tennyson contributes comments and reflections, often based upon the biography of his father which he has published, and sometimes continuing what may be called the poet's "table talk." All lovers of Tennyson ought to feel grateful for the issue of this volume.

The Sounds of Spoken English. By Walter Rippmann. 1–126 pp. (Dent.) 1*s.* 6*d.*—Prof. Rippmann is an acknowledged authority, and this book was badly wanted. It is safe to predict that another edition will be called for, and no doubt many suggestions will be received by, and some accepted by, the author. Twenty pages are given to the organs of speech and fifty to the analysis of separate sounds, while a few pages at the end deal with lists of mispronounced words and with the teaching of reading. The alphabet of the Association Phonétique is adopted throughout the illustrations. When we come to use the book, we may find it too advanced for the ordinary learner. It is rather too full of technical terms, and it might be expanded by means of reading exercises, which, put at the beginning, would give an easy introduction to unfamiliar script. Of course it is assumed by the author, and we suppose by the teacher, that it is a good thing to try to teach standard English. The dialects have gone; school English, teachers' English, Oxford English, Girton English flourish; perhaps Prof. Rippmann's book may lead to a study of standard English. The book might well be interleaved by those using it carefully.

Scott's Ivanhoe. By Fanny Johnson. xx.+291 pp. (Macmillan.) 1*s.* 6*d.*—This carefully abridged and well edited edition of Scott's great novel is an addition to the well-known series for secondary schools. It may be said at once that it admirably serves its purpose, and ought to be welcomed and used.

Scenes from Old Play-Books. By Percy Simpson. 1–248 pp. (Clarendon Press.) 3*s.* 6*d.*—This is a distinctly original book, although the title is rather a misnomer. After the introduction, which is a very bright account of Shakespeare's theatre (but which in our opinion is much too short), the compiler gives us extracts from twenty different plays. It is a pity that there is so much Shakespeare in the book, when there were so many old play-books, non-Shakespearian, ready to hand. A feature of this volume is the fulness of the stage di hope that in another edition Mr. Simpson will fuller still.

The Squiere's Tale. By A. D. Innes. 46 pp 2*d.*—This addition of one of Chaucer's best ductions to this well-known series of Englis a happy venture. The introductory matter a excellent.

Livy's Hannibal in Italy. 123 pp. *D English Mail Coach.* 96 pp. *Travels in Thi The Travels of Captain John Smith.* 137 p 8*d.* each.—These are some more of Dr. Rouse ing-books, and in them he continues his use providing quite uncustomary reading-matter v fully selected, very interesting, and in all c as literature. We once more give unstinted p little text-books.

Paradise Lost. Book IV., xiii.+43 pp xiv.+38 pp. By D. Salmon and W. Elliott. 6*d.* each, net.—A continuation of Messrs. Lon of class-books to which we have previously ac These latter volumes are as good as the fo and for the excellence of their notes and the c brevity of their introductory matter deserve att

History

English Historians. By A. J. Grant. lxx (Blackie.) 2*s.* 6*d.*—This book consists of two an introduction. The first consists of thirt selected from Lord Bacon, Edmund Bolton, a of the eighteenth and nineteenth centuries, ' the view taken by Historians at different p Objects and Methods of History." The seco passages from the Anglo-Saxon Chronicle Chronicle, Clarendon, Hume, Gibbon, Maca and Gardiner, "illustrating the Method and by Historians at different periods." They are and advantage is gained for comparison by Clarendon, Hume, and Gardiner passages b same subjects: Cromwell and the time of Ch introduction is an able sketch of the histo written in English. The subject is abruptly two unequal parts by the exclusion of a Latin, an exclusion which practically ol Middle Ages. After five pages, devoted t Saxon Chronicle and Capgrave, Prof. Gran Cavendish's *Wolsey* and Roper's *More*. Her story is continuous, grows fuller with the n tury, and ends with a short discussion of history. Until a history of history is written summation devoutly wished by the author, these will be profitable and interesting to all teaching of the subject.

Britain's Sea Story. Edited by E. E. Spei Nance. xiii.+427 pp. (Hodder and Stough net.—This book consists almost entirely of writers who have described the doings of adventurous marine from B.C. 55 until A.D. 1 an introduction tracing the development of tl sailing-ships from the earliest times. There full-page illustrations, some pieces of poetry, logical outline, which is, however, not use poses of an index. The authors quoted va Alfred and the writers of the Anglo-Saxon Hakluyt, Sir Walter Raleigh, Purchas,

uch a selection makes excellent reading, and ıould certainly be added to the schoo! library, useful as an addition to the text-book. Some ers are unknown to us, and we could have ıort account of these and of their trustworthi- might easily be added in a second edition.

of English History. By N. L. Frazer. viii.+ lack.) 2*s.*—This is a very good summary of from Roman times to the year 1901. There ee illustrations and twelve maps, and, besides ry, a list of dates in Indian, colonial, and nts, a glossary, genealogical tables, a brief f ten special topics (feudalism, parliament, by party, &c.), and forty pages of biographies. makes a good handbook for scholars whose their history lessons as they should be given—

dmarks of European History. By F. N. Dixon. live.) 2*s.*—To tell the story of nineteen hun- in 140 pages is a task which might tax the the best. Yet we must confess that Mr. ere successfully given us an outline of the main re is, of course, no room for more—and this, h of books on the subject, is welcome. There s and an index.

Geography.

ıe World's Commerce. By J. G. Bartholomew. Part I., 6*d.* To be completed in 22 parts, issued —The first part of this really unique work the middle of March. The publishers claim t is the first commercial atlas on a large scale peared in the United Kingdom, and that, ere l, it will include no fewer than 176 pages of tes containing 1,000 maps and diagrams, to of a voluminous text. If the other parts are st sample, the work should be especially useful ıers and students of commercial geography, used in conjunction with a good physical atlas. rt contains the title-page, the index of contents, g (4 pages) of a gazetteer of commercial com- nd two double-page coloured plates—each in.—of maps dealing with the production and of wheat and coffee. On the back of these inted capital diagrams and notes. Coffee, for treated under such headings as general sum- s commercial geography), development in world total annual production, consumption abso- elatively, sources of the British supply, and rise f prices. The chief drawback of all such ic treatments, when put in permanent form, is dent—statistics are so soon out of date. The supplies an instance to the point. According am showing the United Kingdom's sources of United States send us 43·5 per cent. of our t. The editor is careful to point out that this on the average of the years 1901–3. But er diagram, it had already been pointed out S.A.'s "rapidly increasing population will in check on exportation." This is exactly what happened, and the 43·5 per cent. has, during o years, dropped to under 10 per cent. If d above all teachers—are prepared to watch d keep them up to date, then this atlas should heir most valued possessions, and to all such nd the acquisition of the various parts as fast ar.

America. By Wm. Hughes. 129 pp. (Philip.) 1*s.* 6*d.*—This is one of the well-known series of Philip's Geographical Manuals brought up to date, more or less. Internal evidence points to 1901 as the date in question, though here and there, as in the case of the inclusion of the two new Canadian provinces and the note on the Panama Republic, new paragraphs have been inserted, or old ones re-written. This up-to-date matter reads oddly beside such an old-time statement as that the Canadian Rockies "culminate in Mts. Brown and Hooker" of famous memory; one would almost expect to find that bison were still obstructing Westward-bound trains on the prairies—but the book is sound here at all events. So much information is contained that, we think, the work is more suitable for teachers or students cramming for an examination than for ordinary class-work. But the main defect is the absence of "causes and consequences." We are given, for instance, hundreds of names of towns, and a fact or two in connection with each, but seldom a geographical reason why they have developed where they are. And yet it is just here where a geography, to be educational, should be strongest. For the rest there are no illustrations, no diagrams, no index; to counterbalance there are three coloured political maps, which might just as well have been left for the Students' Atlases, and one curiously antique-looking black and white one of the Western World, the utility of which we entirely fail to grasp.

Highways and Byways in Oxford and the Cotswolds. By H. A. Evans. With illustrations by F. L. Griggs. 1–400 pp. (Macmillan.) 6*s.*—The series of which this book forms a link aims at giving the Arthur Young of to-day a helping hand. It is first a guide-book; then an itinerary; and lastly a mine of historical gossip. You cannot hurry with this book in your pocket. Starting from a Pisgah view of Oxford, the writer bicycles us *via* Woodstock, Banbury, Edgehill, and Brailes, through villages of unfamiliar names to Fairford, Ciceter, and Chipping Norton, and everywhere there is something to be told. County histories have been consulted, old stories are re-dressed, curious inscriptions are copied, churches are praised or abused according as the renovator has treated them reverently or renovatingly. The special note of the book is, we suppose, that it takes us to byways; for few can know the district so well as the patient bicyclist who has written about it. We should have liked more stories about Edgehill, and a little more about such places as Brailes (a fascinating church), and a large number of unimportant names might be omitted for some further yarns, ghostly and profane. But there are several good stories, and the numerous illustrations have not the fault, so common in expensive guide-books, of making places seem grander than they are. Indeed, Mr. Evans has not gone in search of the grand; he is contented with the picturesque.

Mathematics.

Elements of Descriptive Geometry. By O. E. Randall. v.+209 pp. (Ginn.) 8*s.* 6*d.*—In the preparation of this text-book great pains seem to have been taken to make the principles that underlie the various constructions as clear as possible. In many of the current books on descriptive geometry a rule, rather than a general principle, is laid down, and the apprehension of spatial relations is frequently far from perfect; in the general conceptions on which the treatment is based this book is distinctly sound, and the exposition is stated in simple language. In the course of the work a few of the simpler applications to problems in machine drawing, &c., are given, but in the

main the book is a treatise on geometry introductory to practical treatises in which the principles and constructions are required. A student who has mastered the treatment here given is thoroughly prepared for all the usual applications.

Elementary Geometry. Books VI. and VII. By W. M. Baker and A. A. Bourne. 389–477 pp. (Bell.) 1*s.* 6*d.*—The earlier pages follow in the main the lines of Euclid's eleventh book—so far as that book was used in schools—and the treatment does not seem to be much better. The later sections give the simpler properties of the polyhedra and the mensuration of the usual solids. Though the book does not appeal to us as a specially good treatment of elementary solid geometry, it contains much useful matter clearly expressed, and will be found serviceable for school work.

The Theory of Determinants in the Historical Order of Development. By Thomas Muir. xi.+491 pp. (Macmillan.) 17*s.* net.—To anyone with the faintest interest in the history of mathematics—and the number of such persons is happily on the increase—this handsome volume will be a great delight. The subject-matter is, for a considerable section of the book, well within the range of readers whose mathematical attainments are not very advanced, while the gradual development of an important instrument of research is portrayed in language of singular clearness and simplicity. The intrinsic interest of the theory is strikingly shown by the long array of mathematicians who have been attracted to its study; there are few of the mathematicians of the first rank who flourished in the eighteenth and nineteenth centuries whose names are not to be found in connection with some development of determinantal theory, and none who has not made extensive use of it. The reader can commit himself with absolute security to Dr. Muir's guidance, and, while studying this volume, he will learn much more than a knowledge of determinants; he will gain some insight into the vast field of mathematical research, and will be brought into touch with many of the greatest minds that have contributed to the progress of mathematics.

Test Papers in Elementary Mathematics. By A. Clement Jones and C. H. Blomfield. viii.+248 pp. (Edward Arnold.) 2*s.* 6*d.*—The object of this work, as stated in the preface, is to provide a graduated series of test papers on the mathematical work of the lower and middle forms of secondary schools. So far as can be judged by inspection, the papers have been drawn up on very sensible lines; the questions are sufficiently varied, and they are not too difficult. The collection includes a large number of examination papers set by various examining bodies, and this feature should prove very valuable to teachers.

A New Junior Arithmetic. By H. Bompas Smith. x.+222 pp. (Methuen.) 2*s.* 6*d.*—This book is drawn up on sensible lines and is not overloaded with examples, though these are given in considerable number and variety. We are in cordial agreement with the remark in the preface that "the movement in favour of oral teaching may be carried too far"; as pupils advance in their studies they should, we think, be gradually trained to master the text-book without much direct aid from the teacher. As the fashion runs at present, the pupil is kept too long in leading-strings.

A Shilling Arithmetic. By S. L. Loney and L. W. Grenville. xxiv.+186 pp. (Macmillan.) With Answers, 1*s.* 6*d.*—This book is written on the lines of Mr. Loney's well-known "Arithmetic for Schools," though simplifications, suggested by experience in school-tea in many places. Ample provision is made for school work.

Blackie's Model Arithmetics. Three-term S In script figuring. Book II., 48 pp. Book Paper covers, each 2*d.*—These books cover Standards II. and III. respectively; the numerous and simple and the type is exceedi

Science and Technology.

Elementary Treatise on Physics. Trar Ganot's "Éléments de Physique" by the l Atkinson. Seventeenth edition, edited by l Reinold, F.R.S. xi.+1169 pp. (Longm "Ganot's Physics" has been for more than an old familiar friend to students of natura From it many of us obtained our first broad realm of physical science, and the precise meth principles have been established and constant The classical experiments of Regnault, Dulo Laplace and Lavoisier, Arago, Cailletet and cault, Fizeau and Fresnel are associated in ou the treatise of which the seventeenth edition able. To these investigations and many oth kind which laid firm foundations for scientifi the nineteenth century the gift of immortalit not the appearance of perpetual youth. Prof. restored very successfully the parts of this showed signs of weakness or decay in the knowledge; so that while the general cha volume remains unaltered, new material can nearly every page. Dewar's low-temperature activity, colour photography, water-tube bo experiments, wireless telegraphy, and the ph examples of new subjects introduced in the places. The revision has been thorough, anc satisfactory in every respect. The new wine into the old bottle without bursting the s believe that a draught of it would refresh the student of physics who has been depressed centrated juices usually provided by scho Every school in which elementary science is possess the book, and the student who acquir find it a faithful help in scientific study.

The Student's Hygiene. By Ernest Eva pp. (Swan Sonnenschein.) 3*s.* 6*d.*—We gath title-page and preface, that this book is m for students working through the Stage I. s Board of Education; but the greater part seems to be much above this standard of to be quite unnecessarily detailed and tec work of reference for more advanced stude it will be of considerable service. Great given to practical work, but the instructions and experiment are in many cases too vague help to the beginner. An instance of this n from p. 32:—"Find the portal vein, cut it op it into the liver, noting how it branches." believe, the first time the portal vein is ment on p. 132 we are told "how a standard soa be made." Merely to carry out the instruct no easy matter, and the solution when made —would be useless. It must be admitted th experiments prescribed are quite so unfortuna many others need strenuous revision. In flaws the book has many admirable featur commend it to discriminating readers. Th Food, Diet, and Cooking especially merit pra

Science: Plant and Animal Life. By W. S. ii.+157 pp. (Clive.) 2s.—This book has for the use of candidates preparing for the Certificate" examination of the Board of bout one-third of the space is allotted to the llabus dealing with animal life. This portion, onplace in treatment, is on the whole trust- rest of the book, on plant life, contains many rhaps the most serious of these, occurring five times, is the astonishing statement that as the power of decomposing carbonic acid is, one is hardly surprised by the relatively and slips in the book. Of these may be men- tements that the epidermis of the male-fern no chlorophyll, that poplar flowers have two" stamens, and primrose flowers only The nucellus of an ovule is called the nd there are references to the "pith" and " of the male-fern stem, which possesses in, in the description of the yeast plant we sugar "does not provide material for the of protoplasm, since it contains carbon, oxygen only . . . the sugar provides only the organism." Such statements as these make for us to recommend the book in its present lly considering the purpose for which it is tten.

rails. By William J. Long. xxvi.+390 pp. 6d.—In this, the latest volume of his mal studies, Mr. Long breaks new ground, in his own inimitable manner the results of f "white wolf, fisher, salmon, wild goose, nd a score of others big and little" in the d woods and salmon rivers and mossy barren Labrador and Newfoundland. Mr. Long's m lies in his finding in the greater part of ife—playing, working, seeking food, making ng other animals, avoiding traps and enemies ot of a blind instinct, but of a very wide- gence. The result is that the reader gains d often a startling, impression of the onalities. The method has recently been ry vigorously, and Mr. Long defends the is statements and interpretations in a lengthy interesting preface. "To call a thing in- one creature and reflex action in another, or he same thing as love and kindness in one ulse in another, is," he says, "to be blinder n the impulse which is supposed to govern his view may not commend itself to those wild animal only something to be killed, but to all true naturalists. Mr. Long's books t scientific value, but they will be read chiefly gging interest of the narrative and the great eir literary style. "Northern Trails" is ite—as good as "School of the Woods," and rcely give it higher praise. It should be ally, that Mr. Charles Copeland's illustrations od as ever.

out of Doors. By the Hon. M. Cordelia 141 pp. (T. Fisher Unwin.) 2s. net.—This s a capital example of what may be called method of nature-study, and for quite young nethod is probably the best. The twenty-four s treat of what might be observed during a taken twice a week for a year. Although e not in any sense crowded with facts, they manage to convey an astonishing amount of information. At the ends of the lessons are particularly useful sets of questions to be answered. The book may be strongly recommended.

Miscellaneous.

Voice Production and the Phonetics of Declamation. By J. C. Newlands. 128 pp. (Oliphant, Anderson, and Ferrier.) 2s. 6d. net.—This is an excellently printed book, with nice large type, large margins, good stout paper, and a pretty binding. As for the matter, it is perhaps less satisfactory. We do not doubt that Mr. Newlands can point to gratifying success on the part of his pupils; but he, like almost every other teacher of elocution, fails to be convincing on paper. Repeatedly the writer addresses an imaginary hearer, admonishes and corrects him; if instead of this we had a dozen pictures showing, for instance, what Mr. Newlands considers the correct position of the speaker's body, it would have been more helpful. The importance attached to good breathing and the advice given on this subject are to be commended; but such statements as "the concentration of vocalisation should be on the upper part of the chest" are not very lucid; and personalities are best avoided—there is not much value for the majority of readers in the remark that "a want of resonance is to be found in the preaching voice of Canon Gough." How do we "lift the breath off the vocal bands"? What is the meaning of the symbols on page 79? What is the difference between the exercise on page 82 and that on page 83? What is the breathed *r* "common in the South of England"? Is *ch* in *church* a single sound? What is a "contractile movement"? From a scientific point of view the book has little value; of phonetics there is very little, and even that must be accepted with caution. When will teachers of elocution condescend patiently to study speech as it is, before they dogmatise on speech as it should be?

A New Interpretation of Herbart's Psychology. By L. Davidson. 1–191 pp. (Blackwood.) 3s. 6d.—This extended thesis is a defence and an explanation of what the author thinks was Herbart's position. Morality is knowledge: education is morality, and the teacher's business is to impart right knowledge in the right way. The good will, from which morality comes, is only desire *plus* a supposition of attainment: desire being the result which is the balance of presentations, and presentations being the only influences that can affect the colourless soul. If this is all granted, then education is an apperceptive many-sided interest roused through educative instruction, *i.e.* instruction which is the training of the heart and will. There is no doubt that all of it seems easy; that we know well enough how habit can be overcome by habit, and that environment can accomplish (sometimes) the miraculous. But the ordinary reader will be beset by the whispers of "heredity," "apparently ingrained evil," "physiological unfitness": and before these whispers the louder and longer words sink into weary silence. Neither Herbart nor Leibnitz satisfies the practical world: and physiology has yet to have its say. Thus to the everyday teacher the book before us has an academic interest; by its rules he ought to be able to produce a St. John or a murderer at will. As a matter of fact, he can be absolutely certain of producing neither. And at present all psychologies fail us.

Lectures to Teachers on the Prevention of Infectious Diseases. By W. Berry. 1–64 pp. (Bristol: J. Wright.) 6d.—This useful little book is a reprint of five lectures by a medical officer of Wigan; it incidentally pleads for something more than the haphazard hygiene instruction now recommended to, but not enforced on, teachers in schools.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The New Association of Teachers of English and Others.

THOUGH there are already numerous "subject" associations, another was formed on April 28th, at the University of London, for promoting the study and teaching of the English language and literature. There is considerable agreement that further organisation for this end is greatly needed. Of recent years much attention has been directed to English through the efforts of the Board of Education, the Modern Languages Association, and individual men and women specially interested. Publishers, too, have lent ready support. But the efforts have been largely uncorrelated, with the result that in many instances they appear to have died out. It is just this correlation and continuousness that it is hoped the steady pressure of a specific association will be able to furnish.

There has been undoubted progress in raising the standard of English and in improving the methods by which it is taught, yet to this day (particularly in many boys' schools) the subject is held in low estimation. Several speakers at the meeting emphasised this fact, and pointed out that English was either omitted altogether from the curriculum or frequently entrusted to the least competent members of the staff.

Its affinities with other subjects will be granted by everyone. Opposition will hardly be offered to the contention that the classical master may well supplement his examples of the finest characteristics of Greek and Latin authors, probably appreciated only by a few, with similar characteristics from the best English literature, certain to be appreciated by many more; that the teacher of modern languages may use it serviceably by way of comparison and translation; that the pupil is better prepared for the study of science if he possess the power of clear expression without the knowledge of a smattering of chemistry than if he come armed with this knowledge ill digested, ill arranged, and ill expressed; or that the study of history has in its humanistic aspect matter inseparable from what is best in our literature. Few will hold these things to be contentious. What is highly contentious is to assert one of these affinities to the exclusion of the others.

But in all these cases, with the doubtful exception of the last, the employment of English, though serviceable, is subsidiary. The subject is not regarded as ranking on the same level with those it assists. Its position is therefore not of equal honour. Yet it is precisely this equal professional estimation for English that is its peculiar need, if a due percentage of teachers (in boys' schools at any rate) are to make it their special study, and if those who devote themselves chiefly to other subjects, but who, from the exigencies of the time-table, are compelled to do English work, are not to regard it as of merely a perfunctory character.

Of course the claim for equality of honour must be based upon equality of service. Can English render service to education as valuable as that rendered by the classics or by modern languages? I think it can. Some may find this service in the mental discipline of the essay, in the intellectual value of the power of clear and connected thought wedded to clear and representative language. Others again may find it in the direction of scholarship and all that scholarship implies. This is good work, but chiefly critical, and therefore does not differ in the bulk of work done in schools, in whatever is not the appeal of our literature to the em in suggesting higher standards of taste, æsthetic service, of greater value still? Oth their degree, notably history in its earlie classics in their later, make the same app make it so continuously nor with such direct And just because the spirit of the age is materialistic, it is important to assert the particular service which English literature effectively, because so naturally. If this cont and English literature does readily supply to element of great value, and one not so readi other subjects, there is every justification for length of forming yet another association, perhaps the best way of trying to secure that is supplied on a national scale.

Since the suggesting of taste evades mea ment, the reading of English literature in be entrusted to skilful and cultured men and are not necessarily specialists in English, bu do this work. We are told there is a defic men and women. The deficiency is likely t as the subject is held in low estimation. professional estimation will require sustained part of those who love it. The effectiveness will probably vary with the number of teach who engage in it—hence the necessity of local which will be the more useful as it is the les with the sustained value of the effort they the necessity of central organisation of form representative, so far as may be, of local hoped that the new association will supply binding force. Of such an association the doubtedly the heart. For this reason the cons be such as to permit teachers of all grades, join, but to render active assistance. At the it is to do lasting service to a subject in w and scholarship play so large a part, the p scholar and of others who love English letter only welcome, but essential. Already their freely given. It is not easy to underestimat the influence they are bound to exercise.

Subject associations have done, and are deal for the improvement of methods of te great drawback is their multiplicity, with demand upon driving power. But after all difficulty, and therefore not insuperable. Op ing to the direction of federating these socie it has become sufficiently general the task impossible to fashion the requisite machinery.

Liverpool. G. E. S

Is School Science Worth Havin

IN Prof. Armstrong's article of last mo WORLD we have a criticism of science teach no less trenchant than it is suggestive, and to express my thanks to him and to you f tunity it affords of discussing the position schools at the present time.

His question is one for headmasters and well as for science masters. It is for th whether school science shall be worth havin of work largely determine the methods pr have asked, almost in vain, for enlighten Scarcely one headmaster in a hundred has

meaning of an experiment in the scientific
ne the conditions necessary for such.
ave worked, and watched the young student
, and understand the active mental attitude
le if the work is properly directed, can speak
tation for the incalculable value of school
are sure that, under suitable conditions and
rection, it has not its equal for developing
self-reliance, and sound judgment. Besides,
strong says, the opportunities the work affords
nd mathematical co-operation are unique, and
to the educational instincts of every adminis-
public schools.
question of laboratory accommodation, which
good, but a question of educational policy
chool. If straw is not allowed, what is the
ning the maker if the bricks are bad? The
ay be sown, but if the right conditions of
withheld one does not feel surprised to see a

must also be partly attributed to the fact
cience is hardly out of its infancy, and its in-
the domain of educational work has led to
the ways of the ancients, and to putting up
ns of work totally unsuitable for its develop-
the natural consequence of a somewhat dis-
. We must acknowledge that our foundations
ave not always been well and truly laid. Too
t has been given to piling the bricks up, and
he manner in which they fit in with what is
round. Bricks of science—facts of science—
ed up, and in any order, while the sciences of
tability were ignored. We are beginning to
not our province so much to build an edifice
fact and theory as to lay the foundation of
f work, observation, and reflection.
ition of a power to build for himself is more
the youth than any information we can give
can supply. Naturally, in the process of form-
ation much is done that covers common ground,
irection the work may develop later, and facts
that are useful in themselves; but I would
e actual bit of science work done is of less
an the manner in which it is done. The
t be laid on the attitude of the worker to
the thoroughness with which he grasps the
ject of his investigation. The facts of science
ir proper place, and a text-book becomes a
ification, of reference, supplementing actual
nd not studied as something inspired or
k of superior wisdom, and above criticism.
rs' experience of science teaching enables me
efully of science work in secondary schools.
inary change that has taken place in our
thods all over the country in so short a time
hat has been progressively towards the true
od—should promise well for the future.
hrist's Hospital, we have greater opportuni-
than anywhere else of conducting the work
lines, and though we have many cramping
t spoil our plans, the four years' experience
uraging and convincing.

CHAS. E. BROWNE.

spital, West Horsham.

! Well, hardly ever!" to quote Prof. Arm-
te as one who has taught school science for
all sorts and conditions of schools, from a first-grade London public school down to an army-cramming establishment on the South Coast. I have heard all manner of charges levelled against it, as a rotter of clothes and a destroyer of test-tubes; but it has been left to the great protagonist himself to deal it the severest blow of all.

Wherever science is taught to-day Prof. Armstrong's name will be dragged out by the enemy as giving the crowning evidence of the failure of our subject to justify its existence, and, moreover, as asserting the positive harm it is doing to the morals of our boys. Like Socrates of old, we are accused of perverting our youth!—Socrates himself says it. I wonder if Prof. Armstrong has realised that, in the hands of many principals, his tirade may be used as an excuse—and a justifiable one—for further cutting science time. What answer will the unfortunate master give when he is confronted with the name of one who, rightly or wrongly, is held by the man in the street to be an authority in educational matters? The first thought that occurs to me after reading through the remarkable statements of Prof. Armstrong is that he has been singularly unfortunate in his students. It is a matter of some interest to me personally to find that I have been aiding and abetting in supplying boys who are dishonest, who have no initiative, who know not how to experiment, and who—final sin—have not made dozens and dozens of density determinations. I should imagine that the greater part of his dishonest students came from institutions where the gospel of

"Weigh, weigh, weigh"

had been preached and practised *ad nauseam*, and where the new subject "Armstrong" had displaced the older fashioned chemistry.

It is of interest also to find that our teachers of chemistry are incapable of conducting an experiment, and that they have never been taught so to do.

Where are the professors of chemistry? Is Exhibition Road the Mecca of Usherdom, and can no good come out of Gower Street and the provinces?

Verily must we gird up our heuretic loins and say Go, hang.

I am treading on delicate ground when I treat of text-books—being a sinner. I quite agree that in the heuretic paradise no text-books should defile the presence, and further, that in all decent laboratories every boy should be his own author. But from the point of view of one who stands outside the gates of heaven, and for his sins is compelled to pass boys through all sorts of examinations, is all this practicable? No! for the heuretic teaches his thousands and we our tens of thousands. With a class of four I would heurise an I were an Armstrong—but with forty!

The ordinary average experimentally-incapable science master wants some sort of text-book to clarify the ideas of his boys—for revision—for home work—for the boy who wants to read ahead. He finds it useful, maybe because it gives some hints of what other less experimentally-incapable men have done in their classes. If he is a wise man he keeps a supply of them, because he can pick up useful tips from them. They are as useful and necessary to him in everyday school science as a Latin grammar is for his colleague.

Let any science master think of the hundreds of boys who have passed through his laboratories, their keenness, and their interest in a subject which stands out in their school life so brightly relieved from class-room drudgery.

Let them think of the chosen few—and what master

has not influenced some of these with his own spirit?—who leave them with the fixed idea of themselves becoming pioneers in our glorious science. Can they then doubt that school science has been a success?

A. E. Dunstan.

(Formerly Science Master in Owen's School, Islington.)
East Ham Technical College.

As Prof. Armstrong's very interesting and instructive article on science work in the May number of The School World may give rise to considerable correspondence, I would like to confine my criticism to one statement from which I feel compelled to dissent.

The value of science as a factor in mental training is now so generally recognised that further emphasis is needless; but how can we confidently make an assertion such as this:—"*We know* that our subject may be made the means of affording . . . moral training of higher excellence than can be given through any other branch of school work"? The moral training that science gives, where discipline is properly enforced, seems to me to have very much in common with that developed by some other subjects in an ordinary curriculum. Thriftiness, neatness, truthfulness in observation, are important elements in forming character, and the last is essential. But (1) it is open to question whether the accuracy acquired in laboratory work need improve a boy's accuracy in totally unallied subjects. Can we answer with certainty what will be the effect of training one special function of the brain upon all the other functions? (2) Still less can I grasp the implied assertion that such training can be made a foundation for the truthfulness required of boys in their ordinary social relations. Yet this, and much more, are included in moral training. Can science, like history, treat of those motives of human action, touch those springs of conduct, expound those principles of life, which lead the young mind insensibly to form its ideals and frame its patterns from nobler and richer examples, untouched in the process by motives of self-interest, in the effort to obtain a result or win approval? Can all that we require in character be formed by an inductive process of experimental research, however well directed? Perhaps I read more into the phrase "moral training" than Prof. Armstrong intends. F. Brett.

Cranleigh School, Surrey.

In reading the article by Prof. Armstrong in the May number of The School World most science teachers, I think, must have been alternately irritated and puzzled with the arguments used by the writer to prove his thesis. A closer inspection of these arguments, however, would show that beneath the *sæva indignatio* displayed in inveighing against modern scientific teaching there is a genuine desire to remedy the defects in the present system. Unfortunately, the influence that might have been produced by Prof. Armstrong's indictment will be considerably discounted by the want of sympathy shown to teachers, who have a right to expect better treatment from one who has taken such a prominent part in laying the foundations of scientific instruction.

It is perhaps only fair to concede to Prof. Armstrong the existence of "obnoxious cookery-book recipe methods" in certain unprogressive schools—the system of scholarship examinations will account for this to a great extent.

A slight acquaintance with the work of a modern secondary school would show clearly to a careful observer that the dark days of science teaching have almost passed away, and that more enlightened methods are being put into operation. The old "cramming" methods were neither justified by expediency nor were they mental discipline.

Under the Education Act of 1902, secon have at last secured a charter of liberties n under the old *régime*, and science teache appreciate the concession of a four years' struction drawn up without any obligation pupils for examinations, except in the cas examinations.

The pupils brought up under this arrange likely to reach the technical colleges and ur a year or two, but I am convinced that Pro will be agreeably surprised at the mental ca students. Coupled with the improvement in ing, one is glad to note the enthusiasm wit methods are applied to the instruction in modern languages, English, and (recently) ge

The claim of science to be considered the or subject to pupils, because of the practical w strongly contested, and a friendly rivalry different teachers produces a keen desire to and more interesting methods.

The wish of Prof. Armstrong has already and the teacher is compelled to leave his chai with practical lessons. The criticism that t deficient in actual experimental knowledge inaccurate, and fails to take account of th efficiency of university teaching.

The fact that large sums of money are the equipment of laboratories for the high investigation clearly shows that the universi the necessity of sending out teachers adequa and properly trained in experimental work.

Whilst disavowing any intention of teachin "blatant dogmatists," most of us would be d that our efforts have made them capable of for the faith that is in them—even though and sucklings" may have recourse to "techn which, I take it, means clear scientific ter point Prof. Armstrong's pistol appears to hav and he has been obliged to use the butt end on one side his puzzling paradoxes, which the heart of George Bernard Shaw, let us recommendations which are to give science last chance to be saved.

The first golden rule that Prof. Armstron us is "that the pupils must understand w doing," *i.e.* the aim of the scientific experim cede the method of carrying it out. I agree this statement, because a pupil who is ask experiments without being instructed as to will soon lose interest in the subject and deg machine for registering well-known facts. rule, "that the lesson must be driven hom likely to be overlooked by a conscientious tea but repeated drilling in the results of th eradicate the fatal tendency to mental slac part of the pupil.

With regard to the development of alertnes strong points out the vice of "spoon-feedin his heaviest invective against practical text-l wretched subterfuges which act as mental dr

As the author of one of these anodynes wri the nerves of teachers and pupils, I am awa thing I say in their favour will be received v It must be admitted, however, that if a tea considerable time and trouble in working experiments, it may perhaps be beneficial t

nowledge with other teachers who do not ame leisure or means at their disposal. The ce instructor will always use the text-book nd alter it to suit his own requirements; to ook slavishly is a confession of weakness, and rimental to teacher and pupil alike.

itional experts are of the opinion that, while on of studies is an important factor in the school, it is not a wise policy to have a achers who are Jacks-of-all-trades; avoiding water-tight compartments, the specialist will ibject with a greater amount of care and always regarding his subject as an atomic sing bonds capable of affinity with other

out Prof. Armstrong's idea to a logical con- ould be necessary to revive the old dame , in which there was a correlation of studies ne person, or to copy the Gilbertian idea of agogic Pooh-Bahs. Science teachers will not ned by the pessimistic forebodings in the rticle—nay, if they will take to heart his and acknowledge that they have been re- nd dismissed with a caution, they may be o fresh efforts in the endeavour to disprove

nding the protestations of regard for the ience teaching, most of Prof. Armstrong's fail to trace any sign of friendship underlying s, and the eloquent appeal of Hood's heroine ly express the resultant effect:—

s all very well to dissemble your love,
why did you kick me downstairs?"

E. S. A. Robson.

Secondary School.

of the Educational Section of the British Association.

tish Association meets this year at York on t will be more convenient for many engaged o attend the meeting than in previous years. ng committee of Section L has recently con- provisional programme for the meeting, and that the balance of subjects in the curricula all grades constitutes a problem of which an should be attempted. It has, therefore, been vote the principal sessions of this section to *ula* and allied questions, such as the training and the inspection and examination of

lorning, August 2nd.—Presidential Address by E. Sadler. *Friday Morning, August 3rd.*— of subjects in the curriculum of the primary the nature of the training necessary for ich schools." *Monday Morning, August 6th.* nce of subjects in the curriculum of second- and the nature of the training necessary for ich schools." *Tuesday Morning, August 7th.* ection and examination of primary and ools."

nornings the discussions will be opened by The afternoon sessions will be available for of subjects other than those indicated in tline, and it is hoped that members of the siring to communicate papers will give notice ntions to the organising committee at the le date. As the pressure on the time of the section is likely to be great, it is hoped that papers will be short and to a definite point, in order that they may be discussed adequately. The conditions under which papers may be communicated to the British Association will be found in the prospectus of the meeting, which can be obtained from the sectional secretaries or at the offices of the Association. Offers of papers should be accompanied by short abstracts, which, if accepted by the committee, will be printed; these should be addressed at an early date to Prof. R. A. Gregory, 10, St. Martin's Street, London, W.C.; to Hugh Richardson, Esq., 12, St. Mary's, York; or to the undersigned,

W. Mayhowe Heller (Recorder Sect. L).

40, Upper Sackville Street, Dublin.

The Production of Artificial Speech Sounds.

I am not surprised to hear that Dr. Rouse has found the phonograph useful, and I welcome his article pointing out how it may be utilised even for the teaching of Greek and Latin. The phonetician will look forward with keen interest to the Greek and Latin records which have been promised. By helping to popularise the reformed pronunciation of these languages they will do a useful and much needed work.

If I spoke disparagingly of Mrs. Frazer's records, it was not done because I thought them altogether worthless. I was, indeed, aware that they had been used for some time at the Perse School, which afforded strong presumptive evidence that they were of real value. It was only when I actually heard them, and was able to compare them with moulded phonograph records and with the gramophone records which had been made under my own direction, that I felt bound to express my regret that they were not better, and I ventured to suggest that the results would be more satisfactory if the records were multiplied by a method different from that evidently employed.

That the selection of passages recorded was an excellent one I acknowledged with pleasure. I cannot, however, agree with Dr. Rouse that the records should necessarily be made by "persons who are actually engaged in class-teaching, or are in close touch with schools." Let them select the passages and supervise the making of the records; but in choosing a voice for the purpose, the chief consideration is surely whether it is well suited for reproduction, and not whether its owner is "in close touch with schools."

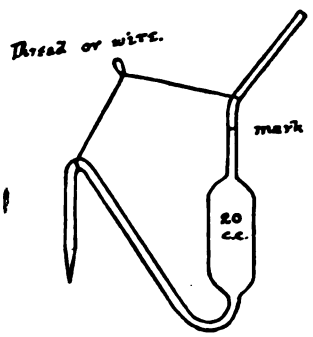
To conclude with a word of warning: those who believe that talking machines will "help less competent teachers" are more sanguine than is safe, and their words may lead the "less competent" or their headmasters into the very serious error of thinking that the talking machine will make up for ignorance of phonetics. For teaching the articulation the sound-chart will always be ten times more valuable than any machine. Dr. Rouse is fortunate in having on his staff such a skilful and highly-trained expert as Mr. von Glehn, who was obtaining excellent results long before the phonograph was introduced into his class-room, and who is able to use it to the best advantage. Changing a sentence in Dr. Rouse's article, I am inclined to say that there is a use for the records *only* in those schools which have good teachers.

Walter Rippmann.

A Safety Pipette for Chemical Laboratories.

The fatality which occurred last month at the Technical School, Plymouth, shows us that an occasional accident will happen in a chemical laboratory, despite the greatest care on the part of the laboratory master. I have read the

admirable article on "Accidents in Chemical Laboratories" by Mr. R. L. Taylor which appeared in the May issue of THE SCHOOL WORLD, and venture to suggest that the use of pipettes for the measurement of dangerous liquids need not be entirely abolished. I enclose a sketch of a safety pipette which can be easily constructed from an ordinary straight pipette. The sketch explains its construction, three bends only being necessary. In the case of a known volume of some dangerous liquid being required (*e.g.* caustic soda solution), the jet end of the pipette is placed in some of the solution contained in a beaker, and gentle suction applied at the other end. The pipette then fills automatically by syphoning. By raising or lowering the bulb of the pipette —still keeping the jet end underneath the liquid in the beaker—it is easy to adjust exactly the meniscus of the liquid at the etched mark of the pipette. This operation is carried out much more easily and expeditiously than with the straight pipette. The jet end is now held over the vessel into which the liquid is to be transferred, and the last drop is secured by first placing the ball of the forefinger tightly over the mouth of the pipette, and then placing the hand round the bulb. The heat from the hand expands the air in the bulb of the pipette, and consequently drives out the last drop. The pipette in this form may also be used as an instrument for determining the densities of liquids. It is only necessary to attach a piece of thread or wire, as in the diagram, in order to hang the pipette to the hook of the balance. When slightly tilted in this manner, all the liquid remains in the pipette. With several pipettes of this kind in the laboratory, such accidents as the one already mentioned would be avoided.



E. T. BUCKNELL.

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Blackie's Latin Texts.

ON revising "Blackie's Latin Texts" I have found a number of misprints, quantity marks being omitted. These are, of course, being corrected on the plates, and I should be grateful if those who use the texts would send me any such misprints which they may find. I do not, of course, ask any indulgence for these, but I may say for those who have not done similar work that the labour is very great, and that the eye refuses to act after a very short time. All the texts have been worked through by two persons, and some of them by three.

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Simla, India. H. G.

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It is impossible in a letter to enume all these lectures, but most of them the *genius loci*. Prof. Oman will ta Kingmaker," Mr. Benson "Shakespea rection of the Dead," Principal Chil episodes connected with the district. made to Stratford-on-Avon, Coventry, C and other spots of surpassing interest assembly is open to all on payment of grammes may be obtained from the Se Surrey House, Victoria Embankment, L

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ROPOSED ABOLITION OF THE TEACHERS' REGISTER.

By A REGISTERED TEACHER.

proposal of the Board of Education to itself from the statutory obligation rame and keep a Register of Teachers ed a series of protests, the number of s probably astonished the responsible f the Board. About the proposal itself n appearance of haste which is neither nor satisfactory. The Board, it would s in too great a hurry to take the opinion per advisers. Indeed, to the Consulta- nittee some injustice has been done. In lent's letter announcing the Board's de- support of a majority of the committee ied for that decision. Yet in the sequel ittee has gone as far as was possible in g responsibility. Moreover, the two dis- d ladies whom alone Mr. Birrell seems to time to consult have publicly dissociated s from the views he attributed to them. s the Registration Council fared much A single phrase in the last report— existing conditions it is not practicable and to publish an alphabetical register of such as appears to be contemplated by 1899 "—has been put forward so promi- the Board as a *pièce justificative* that even ts may be pardoned for thinking that ipping boy" is the real culprit. Read text the phrase seems to refer to some pother as to who should pay for entering s of teachers in Column A on "the official Whether that be so or not the Council is satisfied that the present conditions need rnal, for it has published its regret that ter is to be abolished instead of recon- and has asked that sentence be post- until further steps have been taken to the possibility of framing a comprehen- ster of Teachers more generally accept- e whole profession."

the Board itself has been very ready rances that the assistance it is going to he training of secondary-school teachers nplish all, and more than all, that the ould ever accomplish, though "the kind of training to be required and the institutions in which it should be received are matters on which the Board are not yet in a position to lay down any definite rules" (*Regulations for Secondary Schools: Prefatory Memorandum, May 22nd*, 1906). Having made up one's mind, or, as the Board would prefer to put it, having recognised the inevitable future, it is, of course, well to make out as strong a case for one's prescience as possible. Still, the hasty, and, of course, unintentional attribution to responsible persons and committees of views which they do not accept, and the employment of arguments, the measure of which is as yet uncomputed, are disquieting signs for those who look to the Board to be above prejudice and party, who expect its decisions to be taken deliberately and for incontrovertible reasons.

In order to appreciate the grounds upon which it is asserted that the Register is a failure and ought to be abolished, it will be well to see what hopes there were that have been disappointed. The registration movement has a history of nearly half-a-century, and has been supported by all sorts of people and for all sorts of reasons; but among the latter three or four have always been prominent. In the first place, and with the founders of the movement, the analogy of the Medical Register had a powerful influence. It was hoped to organise a close profession of teachers, entrance to which would be barred to the inefficient and the unworthy. For the public, registration would be a protection against the unqualified adventurers who have always infested the schoolmaster's calling; for the Government, the Register would provide an easy means of collecting information about schools. But the interests and advantage of the teacher were the main objects. The Registration Council's powers were to be very wide. The Council was, by its examinations, to control the entrance to the profession. Social consideration, professional status, and dignity were to be added unto the enrolled teacher. This is to-day a most powerful argument in favour of registration, though the times are altered. The association of the State with the conduct and control of education has grown much closer, and it is now seen that the ideal of a self-governing corporation of teachers must be correspondingly modified.

The Registration Council is a professional council only in its exercise of the power to cancel registration for unprofessional conduct. Still, it is true that "the recognition of a profession with powers (quite properly limited in the public interest) over entrance to its ranks is an essential element in creating a respected and permanent profession; and the abolition of this council, to be replaced by administrative regulations which would end in ranking all members of the teaching profession in the lower grades of the Civil Service, is the chief mischief in the new policy, which does not recognise the value to the community of a corporate professional spirit among teachers." (*Resolution passed by a meeting of the heads of Training Colleges for Secondary Teachers, at Bedford College.*)

The second great object which it was expected that registration would subserve was the organisation of secondary education in England. The only Government Registration Bill, previous to Sir John Gorst's Bill of 1896, was put forward in conjunction with the Endowed Schools Bill immediately after the Taunton Commission had proved the need for a complete reorganisation of the endowed secondary schools, and it was clearly designed to give the Legislature as strong a control over the teachers in endowed schools as the companion Act gave over the school endowments. It is, of course, this aspect of registration which commends it to the official mind, and no doubt the fact that the organisation of secondary education has been for the past fifteen years proceeding upon quite different lines has much to do with the Board's decision to abolish the register. By means of its gradually extending system of grants the Board is influencing the public secondary schools quite powerfully enough; indeed, the "increase of direct official pressure," we are already told, "is in itself deleterious to education."[1] The objection that only through the Register were the private schools brought into relation with the Board has been largely met by the offer of free inspection followed by recognition to efficient schools which are unable or unwilling to accept Government grants.

Are we then to say that registration has no longer a part to play in educational administration, that other methods and instruments have superseded it? Surely the answer is that the schools are no other than the teachers make them. An official list of recognised schools is a concomitant merely of an official list of recognised teachers, and can never take its place. No doubt if the State prescribed a certain course of professional training and issued its own certificate to secondary-school teachers, as it does to elementary, a pigeon-holed document in a Government department would suffice. But secondary-school teachers qualify for their office in a thousand different ways. That is the most effectual safeguard of the freedom and variety of our schools, and long may it be so! But it necessarily involves a published register of teachers whose qualifications are satisfactory and a record of each man's experience. The A Masters' Association has expressed t clearly, though with a rhetoric that ma doned to honest indignation. "Are the s school master and mistress," it asks, " only professional men and women for wl petence the State gives no guarantee? ployers, either in public or private scho allowed to engage assistants who can gi dence of having served a period of appr or having ever learnt their trade? Are to be merely unlicensed amateurs, brin credit upon education by the pranks they it? Are the learned and the ignorant, th and the incapable, the genuine craftsma specious impostor, to be thrown again in discriminate mass?" The question c answered out of a list of recognised sch

The third result which it was expect follow from the establishment of the Re that the training of secondary-school would be stimulated. Witness after w fore the Special Committee of 1891 on Re drew attention to the almost complet training which characterised the second teachers and also to the great need for ir in which such training would be given. list of institutions in Appendix D of the tion Order shows that the desired faci exist, but it must be confessed that we a as far off as ever from the state of th phesied by one distinguished advocate c before the Committee, in which training almost as habitual in the case of second teachers as it is with elementary-school Here, if anywhere, the Register has brol Under the temporary regulations of the tion Order, which were originally to l superseded by permanent conditions i 1905, but were subsequently continue till March, 1906, training was not re the applicant for registration. The pro manent regulations, however, demandec either in a training college or as a studer from all applicants. The Registration 1904 reported that "the women teachers ing themselves alive to the situation" c the coming into force of the permanent re With men teachers it was not so. making practically no effort to avail the the alternative to a training-college o vided by the Order, and the number a the training colleges still remains small. in its report for 1905, the Council find look equally serious. "The number o plicants who were producing evidence undergone any form of professional tra vious to entering on secondary-school was entirely disproportionate to the ne profession; secondly, returns received fr ary training colleges made it obvious disproportion threatened to continue."

The facts are serious and must give gravest apprehensions for the future o secondary schools of England; but by

[1] Resolutions of the Incorporated Association of Headmistresses.

nethod can an argument for the abolition gister be based upon them?
nceded that, as regards women teachers, on is having the effect which was antici- Can it seriously be contended that, in the men, the effect is opposite and that nce of the register discourages training? n is that the neglect of training by men causes which a register with no sanctions cannot touch. Yet even here the register a service. It is authoritatively establish- ct that the profession is losing its attrac- ne youth of the coming generation. It is the "i's" and dotting the "t's" for al reformers like Prof. Sadler, who have aring that the conditions of the teacher's d of his service must be speedily improved not presently to find ourselves with no at all. The plain man is apt to dismiss nings as exaggerated. Here is evidence cannot gainsay.
last report of the Registration Council, stion is made that the movement towards on should be assisted by a sanction, and Board should declare that "no secondary which the headmaster and a fair propor- e staff are not registered teachers will be s a grant-earning institution." So far as is concerned the sanction is to be im- "After the 31st July, 1907, the Board consideration of the teaching staff [of a ning secondary school] as a whole, re- a certain proportion of all new appoint- all consist of persons who have gone a course of training recognised by the the purpose." The Board is evidently that this requirement will suffice in lieu ation, though it is noteworthy that it to take account in this connection of per- se names "have previously been entered n B of the Register." But a register by this sanction on which all teachers their names enrolled will have a much nfluence upon the profession generally quirement affecting at most a few hun- ols, schools, too, in which many quite teachers neither expect nor intend to or must it be forgotten that the Board responsible for codes and regulations, conditions of registration are settled in nstance by the Consultative Committee. e, if choice there is to be, is between ative and professional methods. There to labour the point as to which will be liberal and elastic and the more educa- und.
hen are the present difficulties in the way ntinuance of the Register, and are they e? Setting aside the failure of the en- the profession to respond to the per- onditions of registration, a failure of far as it is due to economic causes, the authorities are showing themselves in- conscious, and for which, so far as it be fessional disbelief in the value of train- ing, the gradual imposition of sanctions should provide a remedy, it may be said that there are two great reasons for dissatisfaction with the Register as it is now constituted; the first an administrative one, the second connected with the division of the Register into two columns.

Up to December 31st last the Board had recognised for the purposes of registration very nearly 3,000 schools. The late Parliamentary Secretary of the Board informed the House of Commons that the work had been extremely well done. "It was a remarkable piece of work to have done in the time," he said, "and should not pass without recognition." The statement was true enough, due allowance being made for the conditions under which the work was performed. The staff the Board had at disposal was far too small to allow of detailed inspections, and as the object was primarily the registration of the teacher and not the approval of the school, justice to the former often involved great generosity to the latter. As a temporary device and for a strictly limited purpose recognition upon these lines was justified. But, obviously, with the coming into force of the permanent conditions of registration the situation is changed. Most readers of this article will be acquainted with recognised schools, the inclusion of which in a list issued with the approval of the Board and for the information of the public could not for one moment be defended. Yet recognition of the school must remain a condition precedent to registration or there can be no "approved service," without which the Register would be useless.

There can be only one solution of the difficulty, and that a drastic one. The latest Secondary School Regulations of the Board, perhaps with intention, indicate the way out. The Board is now prepared to recognise any school, whether eligible for grants or no, as efficient, provided it is found upon inspection to satisfy certain conditions as to staff, instruction, premises, and equipment. No charge is to be made for the inspection. Why then should not the list of efficient schools replace the existing list of recognised schools? Time would be needed to allow of the new methods of recognition being got into working order, but that same time should in any case be given that the interests of existing teachers may be safeguarded. It may be objected that the list of efficient schools will consist entirely of schools which are purely secondary in type. At first that may be so, but having begun with the efficient secondary schools it will not be right, nor will it be possible, to stop there. A large group of schools lives in the borderland between primary and secondary. Many of them are efficient after their kind. Again, there are kindergarten schools and preparatory schools (for the teachers in which, by the bye, the present Register provides no place) which probably reach a higher average of efficiency than any other class of school in England. Once the principle that any schools which cannot earn grants have a right to official approval is conceded, and it *is* conceded now, then

inevitably it must sooner or later be applied to all schools which have a recognised place in our educational system and fill it worthily. Just as now kindergarten teachers feel it a grave disability that they cannot register, and that fact is being advanced as a reason for abolishing the Register, so in no long time kindergarten schools will be claiming their right to a place on the list of efficient schools, and the Board of Education, having learnt by experience, must have already made up its mind to admit the justice of the plea.

Lastly, we come to the real crux, the double column. There is much to be said both for and against it. The registration movement was initiated by secondary-school teachers for secondary-school teachers. The driving power has been throughout supplied by that section of the profession. It is true that the Elementary School Teachers' Union has put forward as one of its objects the raising of teaching to the dignity of a profession by means of a public register of duly qualified teachers for every class of school; still, in the words of its representative before the 1891 Committee, "it has not been for us a pressing necessity that there should be a register, because we were already on a register of teachers," and the Union has done very llttle to aid the movement. Again, it was for secondary-school teachers, unorganised and unrecognised, that registration was chiefly needed. The charlatan was already excluded from the elementary school. Moreover, from the nature of the case, the academic qualifications of a secondary-school teacher differ both in scope and in degree from those of an elementary-school teacher, and in the opinion of many the qualifying training and experience must also differ. A register which was open to the ordinary certificated teacher must have so low a standard of entrance, it was said, as to be practically worthless for the purposes of the secondary school. Yet it was difficult to justify a standard of entrance which would keep out the teacher whose competence was certified by the Government. The only alternative to the double column, namely, a graded register, would have been equally unwelcome to the elementary-school teachers, and in addition would have been unworkable with our present ungraded schools.

On the other hand, the Act of 1899 distinctly laid it down that there should be a Register of teachers, not of certain classes of teachers, and that the names should be arranged in strict alphabetical order. The double-column arrangement, if not actually illegal, certainly evades the spirit of the Statute. The dichotomy, too, between elementary schools and "schools other than elementary" has led to all sorts of anomalies. It was, as an administrative division, clear enough, but the principle of the Register should have been professional and not administrative. When it is possible for a school with perfect continuity of curriculum to be at one time "elementary," at another "other than elementary," according as this or that change is made in departmental regulations, there will be great unfairness as between teacher and teacher. The basis of cla from the point of view of the Register is wrong. Again, the elementary branch c fession has throughout been bitterly o the division. All were clapped into (without so much as "by your leave." high might be their academic qua Column B was closed to them until served in a recognised secondary schoo more Column B grew the less bec chances of ever entering a secondary sc

The Secondary Education Commissior years ago realised the problem. "Unl said, "some *via media* of compromis found it would seem as if the two parti both desiring registration, must rema position of stalemate." After ten yea exactly where we are to-day.

What are the prospects of "comp After what has happened it must be adn a double-column Register is out of the There must be one column, and the c teacher must be admitted. On no other the opposition be bought off. To ju some of the suggestions which have bee ward, the hope of preserving the Re secondary-school teachers still exists. writer, exercising the best judgment he pears a vain hope. The power which put in the Bill will suffice to keep it there. were it not so, no workable proposal is ir

It remains, then, for secondary-schoo to make up their minds quickly whether a of teachers on these terms is worth hav mere register of teachers, which would i classes, whether engaged in secondar elementary, elementary, or technical sc whether teaching one special subject would be of little or no use to teachers in schools, and would serve few or none o poses which those who have worked mo ously for the register of secondary teac earnestly desire. From our point of view be useless, perhaps even worse than usele opinion of the headmasters deserves resp yet, consider it again! Such a Register be a mere list of names. In respect of eac would be recorded "a brief statement of fications and teaching experience." A who will refer to the Register to be pre capable of discriminating between the and the non-graduate, between teac perience gained at University Colleg and that at Gower Street Council Will it be no gain that the name qualified secondary-school master shoul corded, even though many other names as well? If not, then we must comfort with a drawn game.

One last point: if the Register is still occasion should be taken to qualify t "teacher" in the originating clause. Tl ter is needed for school teachers, not for t professors, and it would not be difficult the word school by the age of the pupils.

SCHOOL HOLIDAY CAMP.

By J. L. Paton, M.A.
ster of the Grammar School, Manchester.

e south winds are quick-witted,
The schools are sad and slow,
e masters quite omitted
The lore we wish to know."
R. W. Emerson.

st experience in camping with large ties was in connection with the Boys' gade. I could not help thinking what adjunct such a camp would be to the city day school. The fact that the school boy comes from a more comfort- makes the camp less necessary, it may he standpoint of physical health, but necessary from certain higher stand-

rst place, it is a splendid object-lesson amentals of political or social economy. a return to the primary conditions of r comfortable and complicated civilisa- re so many steps between the boy and needs. When a boy gets up in the has no consciousness whatever of how e have had to be up and doing in the erie hours to make the world com- his lordship; to get him his milk, to re, to black his boots, to bring him postcard. Inevitably he begins to se things for granted unless the hard ght home to him in the form of con- ity. When he comes home from school bed made, his room straightened and dishes washed up, and his dinner d these things are done for him so in- at he gets the idea that they do them- never realises that someone has to do camp he learns that things do not do

There are no servants in camp for reason that everyone must be a servant to himself and to others. The com- ing boy comes face to face with the and necessities of life. He learns *an-* s the Germans would say, the mean- ision of labour. He sees the con- worthlessness of the drone. He sees . Paul's phrase, "those members of hich seem to be feeble are necessary, arts of the body politic which we think honourable, on these we bestow more honour"; in other words, how the an may get on without the philosopher rnament of society"; but the philoso- ornament of society cannot very well out the working man. The camp is ry for practical demonstration and dis- he elements of social science.

e camp is the corollary of nature study

The natural history master can take the specimens instead of always bring- cimens to the boys. He can not only discover the birds' nests, but he can the right attitude of mind and the ard of conduct towards these secrets of Mother Nature. He sees what big eyes the youngster makes when he discovers his first lark's nest, his first sea mouse, or hermit crab; and if the concomitant expansion of the mind is any- thing like the expansion of the eyes, the school camp is worth all the trouble that may have been taken with it. Nor must it be forgotten that perhaps the most important object-lesson for the city boy is the lesson of personal health, and camp teaches him not to be afraid of fresh air, and to love the water. He can learn to swim in a week at camp, whereas it would take him half the term in the stuffy baths at home; and, if he has not learned ambulance at school, he gets usually a few simple lessons when he camps out. In any case he learns to be on familiar terms with the wild, unspoiled life of Nature, and feel the pure pleasure of "God's out-of-doors."

Another indirect result of school camp is that boys on leaving are more capable of helping in brigade camps and keener on doing so because they feel capable.

Such, in brief, is the *why*. Now as to the *how* and the *how much*. The following hints will seem superfluous to those who have done the thing. They are intended for those who, not having experience, are wishful to gain it with as few mistakes and *contretemps* as possible. In the following hints I contemplate the small camp of fifty boys. It is best to start in a small way and let the thing grow year by year. But if a camp is to be worked economically, there should be at least forty to fifty boys.

1. Site.—The site chosen should be well drained. A low-lying grass meadow or pasture is ideal in a dry week, but directly there is a large downpour of rain you will be ankle-deep in mud, and not have a dry pair of feet in the company. Sandy subsoil is the best, but turf is apt to be loose on sand, and a loose turf does not give a proper hold for your tent-pegs. In such a case it is best to attach your tent-ropes to any ordinary bit of wood, and bury the wood horizontally in the ground about a foot below the surface. A slight slope is advantageous, but in that case each tent must be carefully trenched to prevent the water running through under the flap. Secure, if possible, shelter from the wind which is most likely to blow up in squalls and gales. Keep a fair distance from a town; the tuck-shop and the five-a-penny whiffs are only too much in evidence for the city boy. On the other hand, be near to your water and milk supply. The drinking-water should be tested by a competent chemist; negligence in such rudimentary matters is unforgivable in one who assumes the responsibility of a parent. It is well to be within reach of your baker and butcher's delivery carts. Don't pitch too near, or, at any rate, within sight of, a road; otherwise a night watch will be necessary to keep the tramps out. Secure yourself from the intrusion of cattle; cows have more of Paul Pry in them than you suspect. Avoid anthills. Be sure to have good and safe bathing accommodation; get exact and trustworthy information as to the

best place, currents, &c. Fix up the rent charge with the farmer or landowner, but don't let him charge you more than 5s. per week for each tent pitched, and see that this includes water and use of field for games. If drinking-water has to be brought any distance, bargain for use of the farmer's "dandy." Some public authorities, like Conway and Hunstanton, give free permission for camping on the foreshore, and will lay on water for you.

2. RAILWAY FARE.—Having fixed the site, arrange a specially reduced fare with the railway company. The reduction is usually substantial, and boys under fourteen years are allowed half-rate. Make sure also of your transport from the nearest railway station.

3. EQUIPMENT can either be hired or bought. If camp is going to be an annual institution, it is much cheaper to buy outright. The best plan is to order what is needed either for hire or purchase, to keep the stuff that is good, and to send back the rest and pay the hire on it. The firms that deal in second-hand army stuff are, among others:—

Mr. B. Edgington, 2 Duke Street, S.E.

Messrs. J. Langdon and Sons, 136 Duke Street, Liverpool.

Messrs. J. Peters and Son, 44 Tenter Street South, Goodman's Fields, E.

Messrs. Piggott Bros., 57 Bishopsgate Street Without, E.C.

Messrs. Wm. Pope and Sons, 20 Bury Street, St. Mary Axe, E.C.

Mr. A. Pope, Downham Market, Norfolk.

Army bell-tents are the best. Allow for six boys to a tent. Each tent will hold eight or ten at a push, but in case of illness, especially anything feverish or zymotic, one tent ought to be cleared at once and isolated for the patient. This does not overcrowd the other tents if you have reckoned only six to a tent. One extra tent is needed for stores. A ridge tent, Swiss army pattern, is enough for this purpose, and quite convenient. This should be pitched separate near the cooking-galley, and the whole fenced round with hurdles or iron fences so as to keep out all except the cook, quartermaster, and orderlies of the day. A marquee is a great advantage for taking meals together and for the sing-songs in the evening, but it is always a great addition to expense, and, in case of foul weather, a great anxiety. Trestle tables and forms are best hired locally.

Each boy will need a waterproof sheet, 56in. × 36in., on which to put his bed, or, better still, you can get tent-flooring, made in four pieces, and covering the whole interior of a bell-tent, for 30s., second-hand. Enterprising and self-helping boys will put these together for themselves out of tongued matchboarding and joists. Each camper must be provided with a palliasse, which is stuffed full of straw, and serves as his feather bed. Allow 10lb. of straw per boy in ordering, and get allowance for return. A few earwigs will go in with the straw, and boys will learn not to go into hysterics at the them. Two army blankets or rugs s provided for each camper. Pillow-slip provided: as they were chiefly used for t tion of cocklefish and mushrooms, I h regarded them as an *affaire de luxe.* wants a set of pegs fixed up round th looking-glass, a mallet (this is includ cost of hire or purchase), and a hurric If boys bring their own knives, forks, ar a box should be provided for each ten these instruments of war.

For cooking-galley you need a s boiler. The twelve-gallon size will suffi for fifty, and leave enough hot water fo up. In addition, two camp kettles or for use with the field oven or simple milk-pail, water-buckets, wood-chopp chopper, bread-knife, ladles and woode mincing-machine, nutmeg-grater, tin-ope screw, knife-board, serving-dishes, bowls, plates and mugs, knives, f spoons. It saves breakages with untrai Anns in trousers to get all plates and enamelled ironware.

Pick-axe and spade are needed for A big trench should be dug for th waste (we call this "Tophet"), and a the leeward of the camp for latrines; be screened carefully with canvas and bench roughly fixed up. Sterilise d Condy's fluid.

A couple of tin boxes should be taken like bread and tea, which need to be also a box of stationery, a tool-box, an ful supply of packing-needles and th accessories. The ambulance box shoul simple remedies for simple ailments, n ting the toothache tincture. Camp li finds out a weak tooth. Also bandages cotton-wool, vaseline, with simple antis insecticidal compounds.

4. FOOD.—The army allowance of 1s will provide breakfast of tea or coffee, b butter, and salt meat; dinner of hot potatoes and sweets; tea with bread- or jam; supper of cocoa or Eiffel Tow ade and biscuits. If more is given, le way of porridge for breakfast and for dinner. Corned beef and ham, w sional tongue, do for breakfast; ham taken ready boiled. Silverside of beef i dinner-joint, and the soup is as good as Puddings will depend on your cook. pineapple chunks, ½d. gingerbreads treacle or chocolate puddings made wi crumbs are popular. Rice pudding, down well, especially if a few added sul to it an air of adventure. For quantities ing I cannot do better than refer to th Brigade Handbook for Camping," sup cost of 1s. post free by headquarters, Street, Glasgow.

5. DUTIES.—An advance-party should of five or six strong fellows to go dow

o days before camp begins. These will he ground, pitch the tents, dig latrine and fix the canvas screens, set up the galley and prepare the field oven. They unpack all the stores, fill the palliasses w, and set them out with the appertain- kets, two for each boy, in the tents. ance-party has a lot of work, too, and must be not only strong, but willing. rtermaster, if at all possible, should be n. The *quartermaster* is responsible for hase, delivery, storing, and issuing of He is also responsible for the cleanliness tation of the camp, and he will find his ilitated if each boy's blankets and palli- r a distinctive number. This prevents of properties, and in case of infectious t enables one at once to identify the kit.

ok acts under the quartermaster. For enture it is wise to take an old army mmissionaire, or handy man; usual os. a week. But in a small camp it is ssible, and best in many ways, to do paid service altogether. Boys who have cooks' assistants one year will be quite act as cooks next year.

rderlies are wanted to assist the cook. ould be taken in rotation, one from each by day. Advance-party are excused, so yone will get a turn. Their duties are e milk and water in the morning, chop t the table, wait at table, and wash up als; to peel the potatoes and onions, e carrots, wash out the dish-cloths, scrub les, and generally "redd up" under the aster's orders, and take letters to post.

ficer must act as *banker*, and boys should all their loose cash to him at once on nd withdraw at stated hour after break- he day.

r officer must be in charge of *games* nsible for all cricket or other apparatus. also arrange matches, if possible. qualified man must be in charge of the e, and, if night guard is necessary, an ust undertake responsibility for it.

tent will have a *tent sergeant*, whose l be to keep order in the tent, put out sound of the bugle, keep the tent-pegs he ground, see that tent-ropes are slack- the night (you must always presume that in in the night), and have the tent ready ction when the commanding officer comes ter breakfast.

TINE.—Social life is impossible without r framework of hours. There must be imes for reveillé, prayers, breakfast, fol- y camp inspection, and other meals. ould also be appointed time for bathing varying possibly according to state of hen the evening draws in, get a camp g, and have a sing-song (we call it the cordial"); draw out all latent talent, school-songs in chorus; friends often drop in and help with song or recitation; even bagpipes are tolerable in the open; it diversifies proceedings if you have a fire-balloon to let off now and again, or get a good bonfire. Or you may take the whole camp off for a route-march to see some interesting sight, or for a sail; or you may organise some athletic sports.

Rules should be few, but strictly enforced. (i) No intoxicants and no smoking allowed. (ii) No bathing save at bathing parade; no boating save with special permission of commanding officer, who will be careful never to allow it without some responsible officer being in charge. (iii) All waste of food strictly forbidden. (iv) It is sometimes necessary to prescribe bounds.

7. EXPENSE.—If things are kept simple and carefully managed, 15s. a week is enough to cover the expense. I cannot do better than refer to the "Boys' Brigade Handbook," already cited, which gives a good working estimate, and invaluable hints to amateur quartermasters as to the amount of straw, of coal, bread, potatoes, &c., which they should order.

8. The CAMP CIRCULAR should be issued at least six weeks before the beginning of camp, and should give, as briefly as possible, all details which parents will require to know as to time, place, and cost. Boys should be told exactly what to bring—greatcoat and mackintosh, extra suit and cap, change of shoes, underclothing and socks, two towels with loop attached for hanging up, bathing-pants, soap, toothbrush, hair brush and comb. It is best to sleep in flannel, either pyjamas or an old suit of cricketing things. Boys should be warned that stiff felt hats, starched collars and cuffs, and all jewellery are out of place in a camp. Every article should be clearly marked with the owner's name. All kit should be portable.

The *Circular* should also set forth in general terms the duties required, the camp regulations, the postal address, and any special arrangements made for reception of visitors (*e.g.* a parents' cricket-match). If any arrangement is made for storing bicycles, this should be specified. As time draws nearer, it is advisable to have one or more meetings of all who think of joining, to explain more in detail what the arrangements are and answer questions which naturally arise. And, lastly, it will be necessary to give precise instructions as to issue of tickets and entrainment.

A Course in Vertebrate Zoology. By H. S. Pratt. x.+299 pp. (Ginn.) 7s.—Dr. Pratt's laboratory course on invertebrate animals, published three years ago, was in many respects a valuable addition to our manuals of practical zoology, and the present volume will be welcomed by all who have experience of the author's methods. It gives instruction for the dissection of types of all the vertebrate classes in somewhat less detail than is usual in the better-known manuals. There is room, we think, for a course of this character. Only one of the types described is distinctively American, so that the book will be found almost as useful to the British as to the American student.

HOW TO SET TO WORK AT NATURAL HISTORY.

By F. W. Headley, M.A.
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THE object of this article is to assist those who wish to work at natural history, schoolmasters and schoolmistresses in particular, and who need some guidance at the outset. To begin with, two things must be borne in mind: first, that knowledge on such a subject gained only from books is of little or no use; secondly, that what a man learns by his own observation will be insufficient in amount, and must, therefore, be largely supplemented by reading. But what he learns by reading—a very inferior method, no doubt—need not be barren, unprofitable stuff if only he is an observer to a sufficient extent to give life to the facts that he derives from books. What he learns at first hand must find its proper setting among facts acquired at second hand. In these days it is impossible to learn by the use of one's own eyes, or otherwise discover for one's self, all one wishes to know. Some zealots will think that in saying this I am emphasising the wrong thing, especially when the subject in hand is natural history. It must be admitted that most Englishmen have had far too bookish an education. Still, there is a strong tendency among observers to exaggerate the importance of their own observation, and consequently to narrow the field of their studies.

To take ornithology first, the important thing in making a start is to be able to put a name (and the correct one) to a bird when you see it; to know its song or cry; to know which are migrants, which are residents; if migrants, to know when they come to Britain and when they leave our shores; to know the cock bird from the hen if they are distinguishable; to be familiar enough with the plumage to distinguish the garb of youth from that of maturity, the brilliant dress of the breeding season from what is called the eclipse plumage. For these purposes Mr. Howard Saunders's "Manual of British Birds" (Gurney and Jackson) is excellent. The strong point of the book is that it is a storehouse of correct information. There is a wood-cut of each bird. A cheaper and very useful book is Mr. Gordon's "Our Country's Birds, and How to Know Them" (Simpkin, Marshall, and Co.). It contains a large number of coloured figures, which, though not works of art, yet serve their purpose. It also provides much information as to classification and habits. As to the migration of the different species a great deal is to be learnt from Mr. Saunders's book. Mr. Gordon mentions the usual times of arrival and departure. Mr. Eagle Clarke's papers, founded on the evidence obtained by the committee of the British Association appointed to investigate migration, are admirable.[1]

For learning the songs of birds no book on the subject is of very much service, since and phrases sound so different to differe But Mr. Witchell's "Cries and Calls Birds" (unfortunately out of print) assists one's own observations and help them clear and definite. The great th ever, is to be able to recognise the bir song. When song and songster hav familiar, each separately, to ear and ey we can only catch a momentary glimp bird when he is singing, he becomes associated with his music in our minds. best plan to begin the study of the song in the winter time or very early spring, of the migrant songsters are here. In the thrush may be heard if it is fairly wa robin sings nearly the whole year round rest only in July. In March the thrush, thrush, the blackbird occasionally, the chaffinch, the hedge sparrow are welc coming spring with music. When these beyond all possibility of mistake we a likely to be confused when in April the begin to flock in from Africa.

Though other people's notes on the birds are often of little use to us, it is over-emphasise the importance to a whatever he is at work upon, of taking n matically.

Spring is the best time of year for the gist. He has then an opportunity o about songs, nesting habits, breeding migration. Later on, from June to S he can learn to distinguish the plumage o of the year from that of their parents. tember and October, and even in Augu turn migration is in progress.

Myself, I have never been able to u why so many ornithologists are content quite ignorant of the subject of flight. study of this I am obliged to recommen book, "The Structure and Life of Birds millan), since I know of no other whic making it intelligible for those who are in mathematics. In French there is Pro "Le vol des oiseaux" (G. Masson, Paris tific work of a high order.

The classification of birds is a ver subject, since there are not enough sali by the aid of which we can divide orders and sub-orders. I recommend "Elements of Ornithology" (R. H. P museum with a good collection of of typical breast-bones and skulls course, be of great service. There are books from which we can learn mu foreign birds, but there is Mr. Evans's in the *Cambridge Natural History* (M and there is Newton's "Dictionary o (Black). The price of Dresser's great w Birds of Europe," is prohibitive. His of Palæarctic Birds" has no illustrati

[1] They are obtainable at the office of the British Association.

[1] I fear out of print.

the Zoo should be studiously inspected. onstantly being enlarged and improved.[1] part ought photography to play in story? There is no art which requires ng in its proper place than photography. ers Kearton, Mr. Kirk, and others have hotographs of birds that are real works l have taught us a great deal about the f birds. But no definite ornithological has, I believe, been made with the aid nera, except as regards the position of during flight. To a naturalist photo- ay be a snare. He may, instead of is birds, his insects, or his flowers, nself to photographing them and mak- s of them.

on now to the subject of mammals, narking that though every naturalist ome extent be a specialist, still those to do with teaching must be careful rrow down overmuch. Unfortunately, mmals are few in number. Still they interest. The small ones are easily traps. Mr. R. Lydekker's "British " (Allen's *Naturalist's Library*) will at information is required. For those to investigate scientific methods of recommend Prof. Ewart's "Penicuik nts."

at has been already said applies equally branches of natural history. This and ace will account for the extreme brevity arks on the study of insects. For lepi- here is Newman's illustrated "British and Moths" (W. H. Allen)—good for " what you catch. There is Kirby's es and Moths of Europe" (Ernest 'Familiar Butterflies and Moths" (Cas- maller and cheaper book by Mr. Kirby. t I would urge is that some other order chosen for study, *e.g.* bees and wasps; and moths are so beautiful that they resistible attraction. But bees have at equal interest. Schuckard's "British . Reeve and Co.) is a useful book. k's "Life of the Bee" (George Allen) is wonderful charm. Staveley's "British (L. Reeve and Co.) gives an account of nt orders. There is another volume by author, dealing with spiders, a group of ed interest, but one which has but few

s are fertile in interest. They are not study. For identification of land and species there is "The Collector's Freshwater Shells," by L. E. Adams ros., Leeds), illustrated but cheap. A ensive book now coming out in five- rts is "A Monograph of British Land water Shells," by J. W. Taylor (Taylor "British Conchology," by Gwynn Jeffreys, deals with all British molluscs, marine and other. It is foolish to be a mere conchologist, and neglect the structure of the mollusc that secreted the shell. Thomson's "Outlines of Zoology" (Young J. Pentland) is good on the structure and development of molluscs.

Our rivers and their backwaters, our lakes and our ponds teem with life. Huxley has devoted a volume to the crayfish. On "Aquatic Insects" there is an excellent book by Prof. Miall (Macmillan). Unfortunately, for the study of the multitudinous minute pond animals and plants no really good cheap books are to be had. Of course, types of the various classes are described in books on general zoology. Rotifers are very interesting and very beautiful. Hudson and Gosse's monograph, in which they are excellently described, is, unfortunately, out of print. Occasionally a copy may be picked up. Some few species are described in Furneaux's "Life in Ponds and Streams" (Longmans). Then there is Carpenter's book, "The Microscope and its Revelations" (Churchill). To such general books we must look for assistance in studying the minute crustaceans called entomostraca, unless we can obtain a copy of Baird's "British Entomostraca."[3]

But if the forms of life that inhabit fresh water are worthy of study, much more so are the denizens of the sea. No one who wishes to know his way among all the diverse forms of animal life should neglect the marine species. In fresh water some whole classes of animals are unrepresented or represented only very meagrely. If circumstances do not preclude it, I advise everyone who wishes to make himself a zoologist to go to some marine laboratory, that at Millport for example, or that at Port Erin, see what the dredge and tow net can do, examine all they bring up as far as he can, but for closer study limit himself to one or two particular classes of marine animals. In less favourable circumstances one may still do much at the seaside by collecting for oneself and studying all that one can collect. It is not difficult to make a tow net of fine muslin to catch the minute forms of life. Newbigin's "Life by the Seashore" (Swan Sonnenschein) will be found a very useful book.

It is important to get a fairly wide view over the great animal kingdom. We must study the allies of the animals which we observe. It will not do to limit our view to isolated forms. We want for this a book on general zoology. It must be a book which describes the structure well without ever losing sight of the fact that the live animal, not the dead, is the proper object of our studies. Prof. J. A. Thomson's "Outlines of Zoology," already mentioned, can be recommended as an absolutely first-class book, which, though only a crown octavo, 800 pages, passes in review types of the whole animal kingdom. It is packed with facts, but, unlike some books of the same class, never becomes dry and uninteresting. Parker's

ners, Swann's "Birds of London" (Swan Sonnenschein) is

ectors can obtain the apparatus they want from Messrs. oncaster, 36, Strand; also many books on natural history.

[3] Messrs. Baker, 244, High Holborn, supply apparatus for collecting microscopic pond animals.

"Lessons in Elementary Biology" (Macmillan) is another first-rate book. It deals with the lower types of life.

To pass on to botany. Zoology has, no doubt, the grander field, and there are many who agree with the zoologist who thanked Heaven that he was not a botanist. Nevertheless, the botanist has many consolations. His working material is easy to get. While the ornithologist has often to be content with a snap-shot at his bird from his gun or his field-glass, the botanist quietly picks his flower and studies it. "A Year's Botany," by Mrs. Kitchener (Longmans), is simplicity itself, and it is full of matter as an egg is of meat. It lays hold of the interesting points and makes them clear. For identifying plants Bentham and Hooker's "Handbook of the British Flora" (L. Reeve and Co.) is very good. It is as little technical as possible, and what technicalities there are are explained. There is a wood-cut of every plant. Hayward's "Botanist's Pocket Book" (Bell and Daldy) and Step's "Wayside and Woodland Blossoms" (Warne) are useful. De Crespigny's "New London Flora" (Hardwicke and Bogue) supplies information as to the localities near London where particular plants are to be found. Anyone who wishes to take a wider range and to see how deep an interest can be found in botany should study Kerner's "Natural History of Plants" (Blackie). Unfortunately, it is rather expensive, but it is a splendid book. In conclusion, I cannot mislead anyone when I recommend Darwin's botanical books on the fertilisation of orchids, on climbing plants, and on insectivorous plants. In these books we see science not in long-established possession of undisputed territory, but, what is more interesting, advancing and annexing new regions.

LIGHT LITERATURE FOR THE HOLIDAYS.

By ERNEST A. BAKER, M.A.

THE last twelve or eighteen months has not been an exciting time in the literary world. When we think of the days when the weekly papers were announcing new novels by George Meredith and Thomas Hardy, or when Mr. Barrie and Mr. Kipling were going on from strength to strength, the present seems a dull season indeed. Though we may hope against hope, we cannot reasonably expect from the former two anything very important; Mr. Barrie is busy writing plays, and Mr. Kipling's stories have for some years been growing steadily fewer and farther between. Of late the only masterpieces we have had given us have been those of middling writers; and from men who have taught us to expect something greater we have had only middling things. It has been a time of average work, and yet a good standard has been maintained, and the average quality of current literature is respectable.

One event that must be chronicled is the issue of a library edition of Mr. Swinburne's tragedies, previously to be had only in volumes containing single plays, and many of these getting very scarce. From the same great survivor age of poetry a novel was announced ju ago. "Love's Cross-currents" (Chatt to be a reprint and not a brand new wor teresting as a characteristic revelation i the mind of our chief living poet. It w of his youth; but Mr. Swinburne has ne old. Two posthumous works by Georg have turned out to be among his best typical studies of the grim, cramped ex the multitudes in our modern cities—"V burton, a romance of real life" (Constal full-length novel of the same kind as " and "The Nether World"; and "The Cobwebs and Other Stories" (Constabl to be a collection of short stories of the s terly kind as those in "Human Odds an In the latter Mr. Thomas Seccombe writ pathetic appreciation of the dead novelis Mr. Howells and Mr. James we have not surpassing, indeed not equal to, n they produced long ago. Of Mr. Jame and most esoteric style it must be confe one requires a long and arduous training ciate it properly. A pupil of his, Mrs. Edi ton, writes far less abstrusely; her " Mirth" (Macmillan) is a book to repa and reading again.

Several other Americans are among t from whom genuine works of literature expected. Alice Brown, the author of fine and thoughtful study "The Manneri just published a tale of village life in N land, "Paradise" (Constable), a tale o unambitious type, but alive with humour imagination. Its one drawback is the of its vernacular, a feature which has the chief impediment to English appre another powerful novelist, "Charles Eg dock," portrayer of mountain life in T who brought out a novel, "The Storm (Macmillan), last summer. Owen Wiste parted from the virile and strenuous style Virginian," and dealt with a quieter "Lady Baltimore" (Macmillan), depi placid rural world of a little town Carolina. Mrs. Wiggin's "Rose o' th (Constable) and Alice Hegan Rice's (Hodder), both characteristic stories oughly individual writers, would, doubtl made more stir had not their authors t better work beforehand. Readers to w creator of Sandy is a new writer, and charmed with the book, will have an privilege in being able to acquaint themse "Lovey Mary" and "Mrs. Wiggs of bage Patch" for the first time. In " the Big Bear of Tallack" (Constable), M Thompson Seton has produced another t of a grizzly. In spite of Americanisms a effusive style of prose rhapsody, Mr. Set of the hunted, with their revelation of th the wild, are books to teach both young the right note of good writing—they have and spontaneity that constitute inspirati

Crawford can hardly be counted an
n at this time of day, but "Soprano, a Por-
Macmillan), which he added a little while
ie long array of his novels, may as well be
with the rest.
ost arresting of the new generation of
is Mr. Maurice Hewlett, whose "Fond
es; Tales of the Youth of the World"
an) and "The Fool Errant" (Heinemann)
ting books enough, though again not
is finest. His literary ancestors are two
trasts as Meredith and Kipling. The in-
the former is more obvious because more
al; it is traceable in his style, which is a
ltivated and exotic thing, and also in some
f his psychology. That of the latter is
found, at any rate in the two works now
tice, for it informs the whole spirit of the
. In one story among "Fond Adven-
Ir. Hewlett, the greatest scholar among
velists, has set himself to reproduce the
he Sagas. The incident of the family
council of relatives, the treaty-making,
eath of Buondelmonte make you think of
nd the Laxdale story, and so does the
taccato character of the narrative. There
e mediævalism about Mr. Hewlett. He
th like a modern and like a man out of
le Ages—like a man from the very times
ys who has learned to speak the idioms
. No one has carried farther the prin-
rt for the sake of art; no one has more
rtistic detachment belauded by certain
In this little bundle of tales the reader
f there were no such thing as sentiment
ty, and the result is a hardness and cold-
re is not a figure among these vivid
for whom one could have a spark of
or friendly sympathy. "The Fool
tells his own story, but does not induce
ve him. He is too strange a curiosity,
wonderfully vitalised. Francis Strelley
ual Quixote. The author calls him "an
believer in the native goodness of man-
Committing what the world of his day
d a venial sin, but he with his supra-
morality looks upon as a heinous crime,
away rank and wealth and sets out on a
pilgrimage to earn forgiveness. His ad-
among all classes in eighteenth-century
as interesting and exciting as any picar-
nance; but the real interest is in his
visionary character, and the diversity of
comes in contact with in that unconven-
l profoundly unmoral society. Another
similar ancestry is Mr. Bernard Capes,
done far better work than "A Jay of
Iethuen), the main idea of which is, how-
ble one. But the writer's cleverness has
language and character to such an ex-
the one seems hardly English and the
lly human. Again another Meredithian
arles Marriott, whose "Mrs. Alemere's
t" (Nash) and "The Lapse of Vivien
Iash), though more realistic and sober,
have not the brilliance and charm of his first book, "The Column."

Mrs. Humphry Ward, in "The Marriage of William Ashe" (Smith, Elder), raised more than a suspicion that she was drawing from actual originals of a former generation, and in "Fenwick's Career" she makes no disguise of the fact that her story is a more modern version of the artist Romney's life. These books are not equal to "Marcella," but they contain some of her best portraiture of women. Other novelists who have given us good things, yet not of their best, are Mrs. Margaret Woods in "The King's Revoke" (Smith, Elder), Mr. Stanley Weyman in "Starvecrow Farm" (Hutchinson), and Mr. Anthony Hope in "A Servant of the Public" (Methuen). Mr. Crockett in "Kid McGhie" (Clarke and Co.) has all but created another Cleg Kelly. The miraculous career of "She" has been continued by Mr. Rider Haggard in "Ayesha" (Ward, Lock), while he has tried another sort of adventures in "The Way of the Spirit" (Hutchinson). The pleasant comedy and the charming sentimentality of Agnes and Egerton Castle reappear in "French Nan" and "Rose of the World" (both Smith, Elder). Walter Raymond has put more "good souls of Cider Land" into his new Somersetshire story "Jacob and John" (Hodder). Another country novel that breathes the right spirit is Gwendolen Pryce's "Son of Arvon" (Unwin), the life of a young Welsh yeoman on a farm in Carnarvonshire, full of affectionate appreciation of the Celtic nature. "Q." is writing more tales of the Delectable Duchy. "The Mayor of Troy" is a sort of sequel to that inimitable comedy "The Astonishing Adventures of Troy Town"; "Shining Ferry" contains some of his most engaging and most humorous character-drawing in the hearty old she-skipper, the blind boy and his sister, and the simple, wholesome people of a world that seems like a survival of some primitive Arcadia. The introspective studies of a strong, successful man brought face to face with impending death, and of a self-righteous, cruel man whose vile nature is suddenly revealed to himself, are more serious, and the former, at any rate, is deeply impressive.

A new school of sea-writers has arisen and thrown into the shade the later stories of Mr. Clark Russell, author of that very fine romance "The Wreck of the *Grosvenor*." Mr. Edward Noble, author of "The Waves of Fate" (Blackwood), Edmund Downey, with his amusing "Dorothy Tuke" (Hurst and Blackett), Norman Duncan, with two novels, "The Mother" and "Dr. Grenfell's Parish" (Hodder), have this in common that they give a most vivid realisation of the mariner's life with little romantic embroidery. Mr. W. W. Jacobs can hardly be classed as a simple nautical story-teller, though he still shows a preference for seafaring characters. His "Captains All" (Hodder) contains more landsmen than sailors, the best story being "The Temptation of Burge"—a converted burglar. The compact little farces and drolleries of this book are more congenial to him than the kind of thing he at-

tempted the year before, "Dialstone Lane," a long story which contained humorous characters and comic scenes, but had a lame ending. Mr. Jacobs represents the lighter side of Dickens, the Dickens of the "Sketches by Boz"; he is a teller of tales, not a novelist.

A group of public school novels is noteworthy. "Hugh Rendal" by Lionel Portman (Methuen), "The Hill" (Murray), a remarkable study of Harrow, by Mr. H. A. Vachell, and Mr. Desmond F. T. Coke's story of Shrewsbury School. Mr. Vachell has since published a novel of Brittany, "The Face of Clay" (Murray), in which some artist and peasant characters are admirably drawn. Mr. Archibald Marshall's "Richard Baldock" (Alston Rivers) is a readable first novel; the best part of it is the life of a boy at home and at school.

Sociological novels have a way of being pessimistic and depressing. This is not the case with Mr. Richard Whiteing's "Ring in the New" (Hutchinson), which deals with the problems of the London poor, and portrays and criticises actual crazes, vices, and theories of the day, and yet is of the nature of an optimistic forecast. It is a contrast in this respect to the American work that is making such a stir on both sides of the Atlantic just now, "The Jungle," by Upton Sinclair (Heinemann). Mr. H. G. Wells's last book was a departure from his more characteristic studies of society, and a return to the style of one of his most promising early novels, "The Wheels of Chance." "Kipps, the Story of a Simple Soul" (Macmillan), with its analysis of the class instincts, seems to owe some of its strength to autobiographical material. The poor, half-educated draper's assistant, getting a fortune and the opportunity to rise in the social scale, finds his happiness in his old sphere, and content with his natural lot better than wealth. It is a new and subtler reading of an old adage.

Historical novels have not overwhelmed us in quite such a flood as a few seasons ago, but they are fairly plentiful. Mr. Ford Madox Hueffer's "Fifth Queen" (Alston Rivers) chronicles a year of the reign of Henry VIII. at the time when Cromwell was negotiating the marriage with Anne of Cleves. The intrigues of that minister and of his spy Throckmorton, of Bishop Gardiner and the Princess Mary, furnish plenty of business, but the principal interest is in the "Fifth Queen" herself, Katharine Howard. The book is rather a brilliant pageant than a deep portrayal of the time. George Bartram's "Lads of the Fancy" (Duckworth) is a muscular novel of the days when an Englishman was "something blent of demigod and viking"—in other words, of the year 1811. It is full of strong and healthy-minded men and women, and of stirring incidents of the most various kinds, from prize-fights to elopements. Mr. R. H. Forster's "Arrow of the North" (Long) brings us back again to the Tudors, and is crammed with historical knowledge about the Scottish border and Northumberland at the time of Flodden. Mr. J. H. McCarthy has, in "The Flower of France" (Hurst and Blackett), made Joan of Arc the theme of just such anothe as "If I were King" and "The Dry Wymond Carey's "No. 101" is the ro secret agent in the days of Louis XIV., liant, dissolute court is alternately the the camps and battlefields of the Low Mrs. A. E. Barr has gone twice again York for stories of her usual simple, edif "A Story of a Single Note" introduces again to the revolutionary period, and of Bowling Green" (both Unwin) to 1812–14 and the war with England. Be shall's "His Most Dear Ladye" (See story of Philip Sidney's sister, the C Pembroke, for whom the "Arcadia" w and is much in the same style Barr's. Harold Molander's "Fortun (Heinemann) and Lawrence Mott's "J Great Heart" (same publisher) deal, th the times of Gustavus Adolphus and with Canada in the days of the Hudson pany. Max Baring's "Prophet of a study of the Singing Revival in Wa good deal of actual fact and portraitur people. The list of historical stories largely extended; these are a few of recent.

THE "BLUE WATER SCHOOL TEACHERS.

CHEAP HOLIDAYS ON TRAMP STE

By A. G. LINNEY.

THE schoolmaster who, jaded a with the work and examinati summer term, rushes strai a-Lunning or with the Polytechnic, getting a change of air and a contr roundings. I have not a word to s these enterprising people, whose orga arrangements are often so helpful t The chances are that there will not b but very likely a score of dominies in and, even if "shop" is reduced to a there is an almost unconscious moving those in the profession. Even should so, this much is certain—the schoolmas company of those of his own social point of view from which life is r virtually the same.

A holiday on a trading steamer, c tramp" if you like—the terms are no ous—will give, not merely a change scene, but an insight into the life of a very honourable profession, and will to catch a glimpse of how Men reg from a point of view which is probabl to the teacher.

HOW TO SET ABOUT IT.—The owners steamers are not inclined to give couragement to anybody seeking to on their boats. Board of Trade regu framed to discourage the carrying o concerned in the working of the ship.

ler will find that his best plan is to seek friend who is connected with a shipping shipping firm; better still if he has the e acquainted with one of the owners of t steamer. Then the matter can be without great difficulty. It is a simple ne passenger to be signed on the ship's an extra engineer or as a second steward as a cook's boy; he will duly proceed hipping office and "sign the book" rest of the crew. The nominal wage of g a month" need not harass his soul. ossible that the affair may be arranged an ordinary passenger agent, but these not keen on undertaking anything of the I strongly advise anyone who intends trip of this nature to try to work it friend who has influence with owners boats.

ESTION OF COST.—No hard-and-fast rule given on this point. On one or two e writer has paid as little as half-a-crown r everything; on other steamers the ave charged 3s. 6d. per day, and the s seldom more than this. In port the is welcome to stop aboard the boat if , and, at the terms indicated, it is vastly o do so. It is, I fancy, the common the fees paid by a passenger on a trad- are the perquisite of the captain. In n my own experience I had the greatest n persuading the skipper to accept even half-crown a day" scale. On the other ne men almost expect a present or token above the arranged payment.

ward, on whom one may be largely de- or comfort or attention, should never l in niggardly fashion.

ORTANT POINT.—There is one matter on s well to be forewarned, and that is in time. A regular passenger steamer re or less punctually, but the same can said of the trader. You need never get away at the hour which will have cated to you, even if it has been given most good faith. The cargo has been coming in, or the engines have been ilty, or the stevedores have gone on something. The writer once spent five days at Barry Dock in a steamer bound tar. Most of the coal was in bunkers, he miners went on strike. Again, forty er the coal-tips on the Manchester Ship an experience which I don't want to

ne uncertainty exists on the homeward o that it is as well to allow a good etween the nominal date of arrival and ning of school.

IODATION AND FOOD.—I am presuming schoolmaster is most likely to seek a luring his six or seven weeks' summer nd that, therefore, the question of rag- and stormy winds may be disregarded. day or two may be rather trying if the passenger is not the best of sailors, and he may miss the ministrations of the sympathetic professional steward, but I believe that he will usually find that he gets good attention on the humbler tramp. One thing is sure: he will be glad to miss that awful intangible cabiny smell which hangs about cross-Channel and ordinary passenger steamers—that impalpable suggestive odour, which is in itself quite enough to make the gorge rise.

The passenger on the cargo boat will very likely have a whole cabin to himself, and it is improbable that he will be cramped for room, even should be have a companion. There is nearly always a spare cabin off the saloon of this type of steamer, and one can be sure, too, of a bath-room. Much greater freedom is one of the chief advantages here, for there need be no donning of regulation garb, no conventionalities to be observed, no "Second-class passengers not allowed, &c." You can smoke when and where you like, and, unless you prove yourself an obnoxious fellow, you may spend all day on the bridge.

As to food, there is plenty of it. It is generally good, and I have never experienced the slightest unpleasantness in this respect. Meat will be on the table at every meal. There is always a variety of tinned foods, and fresh vegetables are got in port. The sea air gives most travellers a ravenous appetite, and I do not think that anyone contemplating a trip of the sort in question need worry himself on the point of victuals. The steward, if you do not treat him in too high and mighty a fashion, will always manage to let you have a cup of tea in the afternoon; but if the traveller wishes to have beer or wine with him, he must make his own arrangements. Tobacco he can buy from the captain, and that without the duty which he would have to pay on shore.

For ladies the same facilities do not exist—at least, not to my knowledge. Of course, there is no inherent reason why two ladies should not go together on a steamer of the type in question, provided they have managed to secure the necessary co-operation of someone connected with the shipping firm. I should doubt very much if it would be possible for a lady to arrange a voyage without this backing. No member of the gentler sex need fear that she will be treated other than with the greatest courtesy by the officers of a "tramp" steamer; they may be a trifle rough at times, but they are quite as often diamonds.

SOME PRACTICAL ADVICE:—

I. Don't take a mountain of baggage.

II. A trip of this sort is a grand time for wearing up old clothes, especially old flannels. One pair of boots is enough, and take one or two pairs of light shoes or rubbers. If you want a deck-chair, take it with you, for there may not be any on the boat. If you possess a suit of oilskins, put it in your kit; then you can be on deck whatever the weather or the sea is like.

III. Rake up a bundle of old illustrated magazines or sixpenny paper-back novels; even if you don't want to read them yourself, the officers or

the engineers will be delighted to take them, and they will not think worse of you if you leave them behind.

IV. Arrange for your letters to be sent to any ports at which you are going to call, care of the ship's agent, and then your mail will be brought aboard when the boat drops anchor, and you will be saved the trouble of going to the local post-office and trying to convince foreign officials that you really are yourself and none other.

V. Don't forget your camera.

WHERE TO GO.—Presuming, again, that the schoolmaster intends to give himself a good sea trip during his summer holiday, he will find that a fairly wide field lies before him. Among the longer jaunts, the writer found the following western voyage a delightful experience:—From the Manchester Ship Canal (the foregoing adjective does not cover this portion of the trip) across the Atlantic, up the Gulf and River St. Lawrence to Montreal, spending a day *en route* at Quebec, where the boat called. At Montreal the steamer remained to discharge and to reload. There was ample time to proceed by lake steamer (passenger) to Toronto, to cross the lake to Queenstown at the mouth of the Niagara River, to go up by electric car to Niagara itself, and to spend the best part of a day at the Falls. A magnificent journey back by boat through the Thousand Islands and down the Lachine Rapids to Montreal again was possible in ample time to join the steamer still loading by the wharf. This holiday, I may add, can certainly be done on under twenty pounds, and lasts about five weeks. This is one of the most expensive "cheap" trips.

The Mediterranean is full of possibilities for the "tramp tourist." This is a suggested itinerary which is feasible for summer holidays (quarantine delays ever excepted):—A British port, across the Bay (it is somewhat maligned, so the writer thinks—he has had but one bad time in five crossings), southward within sight of the Iberian coast, Gibraltar, possibly touching at Algiers, Malta, Alexandria, Syrian coast ports, and home again by Cyprus and Malta.

What we may call a direct trip, say from the Tyne to Constantinople and back, is a variety. Other direct trips, easily done so far as time goes, are to some of the United States ports. In these cases the traveller gets a good sea holiday, but he may feel that the days are monotonous, though the daily kaleidoscope of sky, air, and water is a ceaseless miracle. The West Indies are almost to be included in the direct trips, too.

A PEEP AT FOREIGN PORTS.—There is ample choice for those who want to see something of the land life in another country, as well as to get a taste of the "life on the ocean wave." This little trip occupied the writer just three weeks, and the needful expenses were well covered by a five-pound note. From the Tyne to the Thames with coal, two days discharging, thence to Bilbao, where the steamer remained about ten days in the river a few miles below the city. press of boats seeking to load with or this length of time, but we were back in brough within three weeks.

Another similar holiday went on thes The steamer took coal to Gibraltar, from there to a small place on the coast of Spain, where there was only roadstead. Here we loaded ore, and away for Rotterdam, coming back hom From the Tyne there are plenty of colli will go out to such places as Genoa, S Palermo and back, thus giving the good "stretch off the land," and a fe foreign soil into the bargain—this, too, which, by comparison of railroad fare senger steamer rates, is absolutely ridi

For quite short runs at cheap rate always a swarm of traders plying c Tyne, the Humber, and the Thames to as St. Petersburg, Bremen, Hamburg, Amsterdam, and elsewhere, though the dation in this case is rather more d regards comfort.

A TYPICAL DAY.—The absolute freec life on a "tramp" will be one of t things for the tired teacher who s "shilling a monther." If he wants t can do so; if he wants to read all day body will say him nay.

The mate on watch will send a han you any time after four a.m. (or ear like). You can sail up on to the dec pyjamas and have a sniff at the morn while your salt-water bath is filling, done, come on to the bridge and cha officer on watch before breakfast. Ni should see you on deck again, perhaps of books or magazines, which you b the bridge, where your chair is rea shade. The sea is blue and the sun The day is before you, and the mate won't mind a yarn, and the "Old Mar will very likely come along for a cha won't do, then go forard to the fo'castl watch the stem cutting crisply through and the school of porpoises tumbling a

Much you can learn of the lore o gipsies as they pass now and again wanderings from port to port. Noon is the skipper comes out to "shoot the establish the position of his ship; no dull happening if your soul has not los of romance. One can turn in for a afternoon and come on deck again wh has lost its strength a mite. At tea, and heat of the day being over, the your companions in the saloon will be loosened, and you will all adjourn a the pipe of peace on the hatch. Then Man" will tell yarns of his doings wh an apprentice, and his officers will "cuffers" and peradventure the chie will join you, and, in broad Aberdo tribute his views on life, and tell of hi

:s on land or sea. The sun drops, drops, wings of night encircle all the water. t breeze wakes, and there is silence, save eethe of the wavelets overside and the l "Lights burning bright, and all's the man on the fo'castle head.

EACHING OF IT ALL.—And at the end, are back to the daily battle once again, ise that you did not "suffer a sea in vain. You have been with men, you n "the daily toil of gentlemen un- you have talked and laughed with those is in great waters, and who "bear the l cattle lest street-bred people die." No do these things and yet fail to feel that l horizon has been widened. He, "a he world of men," will have a better ding of his brethren; he, to whose recious years of future citizens are en- will have caught a fresh glimpse of the tion of the ocean power which rests with land. So will he himself the better d, and thereby help his pupils to under- at England really is the England of our nd is still—

his precious stone set in a silver sea,
Which serves it in the office of a wall,
r as a moat defensive to a house,
gainst the envy of less happier lands.

E EXAMINATION AND MARKING OF PRACTICAL WORK.

By Hugh Richardson, M.A.
r Science Master, Bootham School, York.

E has not yet been any organised move- nt for persuading schoolmasters to work thout wages; we need not, therefore, onsider the suggestion that in an ideal he boys would work without marks. oth the quality and quantity of the work neasured, some form of piece-work, or by results, would seem the justest way ng. Further, when we are introducing s to any new kind of work, such as science, it is important to secure tho- s and diligence throughout the class from beginning; and to this end we may take y methods of stimulus and discipline, the which have been tested in other fields. mpossible to mark answers unless the set have been definite; but definite may be set so as to elicit answers of orms. We shall have to deal not only tten compositions, but also with mea- s, calculations, statistics, plotted curves, , diagrams, apparatus, specimens, &c. t is part of our object to evoke answers at many different forms. As some of ns are new to the teacher as well as to ar, it is useful for us to discuss the best harking them, in order that the teacher alert in discovering a right method in , and that the class may not feel discour- vant of prompt recognition of good work.

Boys are as voracious of mental as of physical food. It is not enough to tell a class to measure the diameter of a halfpenny, and expect them to be quiet and orderly for an hour. There should be a superabundance of exercises sufficient to retain the interest and direct the energies of everyone for more than an hour. If these exercises are short and simple, it is the more important for the teacher to have a list of answers ready. If the experiment is more difficult, then repetition and averaging of results will keep most boys employed, and allow the teacher leisure to assist those in difficulties.

Heads and Tails.—We may get some help in this matter by a study of the theory of a penny thrown into the air. There are two alternatives —"head" and "tail"—which appear equally probable in its fall. If the penny is thrown three times successively, then the eight possible sequences appear to be—

H H H	3 heads	once.
H H T, H T H, T H H	2 heads and 1 tail	thrice.
H T T, T H T, T T H	1 head and 2 tails	thrice.
T T T	3 tails	once.

And as each of these eight sequences appears equally probable, we may say that the numbers 1, 3, 3, 1 measure the probabilities of our getting 3 heads, 2 heads, 1 head, or 0 head after spinning a penny three times. The result is confirmed by experiment. For a class of 22 boys, in which each pair of boys spun a penny 64 × 3 times, the averaged results were—

3 heads	in 3 tries	1·10 times.
2 „	„	3·07 „
1 head	„	2·78 „
0 „	„	1·03 „

numbers which are nearly in the ratios of 1 : 3 : 3 : 1. It may be noted for reference that these numbers are the coefficients in the expansion of $(a+x)^3 = a^3 + 3a^2x + 3ax^2 + x^3$.

Curved Lines.—Suppose that the measurement of a curved line is made by a thread in 10 steps, and (for the sake of argument) suppose each step is measured either correctly or with an error of 0·01 inch. Then the total length will be wrong by as many times 0·01 inch as there were steps incorrectly measured. If we suppose that the "errors" 0·00 and 0·01 are like heads and tails each equally probable, then it becomes possible to set out diagrammatically all the possible chances. Thus:—

	Total error
·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00 ...	0·00
·01, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, ·00, and there will be altogether ten different stages at which a single mistake of 0·01 would produce the same total error	0·01

The case of two errors of 0·01 each may be explored by the methods of permutations of 2 things in 10 places, showing that a total error of 0·02 may occur in $10 \times 9/1 \times 2 = 45$ different ways.

Or, more briefly, we may use the coefficients in the expansion of $(a+x)^{10}$, viz., 1, 10, 45, 120, 210, 252, 210, 120, 45, 10, 1, to show that—

Total error of	0·00	can occur in	1	way.
„	0·01	„	10	ways.
„	0·02	„	45	„
„	0·03	„	120	„
.	.	.	.	.
„	0·09	„	10	„
„	0·10	„	1	way.

Then, when we know the probabilities of certain total errors of known magnitudes, we can form some judgment as to how many boys are likely to get such answers, and what marks they may deserve.

SORTING DRAWINGS.—Suppose we have a pile of drawings to mark in which the question has been set to test exact geometrical draughtsmanship. We can easily sort the drawings by eye into three heaps—good, middling, and bad—of which the middling heap will probably be the greatest. Each heap may be subdivided into three smaller heaps in the same way. It is an assistance in delicate discrimination to have a correct copy on tracing-paper, to be laid over the drawings to be tested. We have now nine heaps; revising these, some adjustments will be made, and the best drawing and the worst drawing may be picked out to make two more heaps—total, 11 heaps. To these we may assign marks—10 to the best, 9 to the next best heap, and so on down to 0.

The theory of errors would suggest that the number of papers in each heap should be proportional to the coefficients of $(a+x)^{10}$ already alluded to. Then, among $2^{10} = 1024$ papers,

1	paper	would get	10 marks.
10	papers	„	9 „
45	„	„	8 „
.	.	.	.
1	paper	„	0 „

Probably most teachers of experience will agree that extreme marks should be given less often than medium marks.

MARKING ON THE BLACKBOARD.—It is often interesting to have answers read out by the class and written up on the blackboard. Perhaps when this is first done the numbers from a burette experiment may seem in hopeless confusion—all sixes and sevens:—6·3, 7·8, 6·1, 6·8, 7·4, 6·0, 7·9, &c. In that case it may be best to reject all and to give no marks. The experiment may be discussed again, possible mistakes suggested, and devices invented for guarding against them. Then, after the next lesson, an improved set of numbers will appear, such as:—6·3, 6·6, (6·9), 6·4, 6·5, 6·4, 6·3, 6·4, 6·5, 6·6, 6·5, 6·4, (6·0), 6·4, 6·5, &c.—almost all between 6·3 and 6·6. These we deal with (i.) by bracketing outlying numbers as practically certain to contain large and p errors; (ii.) by averaging the rest; (iii.) the ing answers are then marked, beginning v highest marks for those answers which lie to the mean value, and with descending m answers a little too great or too small. V have to decide what the highest mark (perhaps 20 for an hour's work), and ho of the answers are to come within markii (? all those contributing to the average).

SCALE OF MARKS.—Then we need som a scale of marks. For this purpose the gests the scales from the coefficients of $(a+x)^3$, $(a+x)^4$, &c. If it is a simple ge question, as "Measure the diagonal of with side 2 inches" (answer really 2·82 may mark roughly by 1 : 2 : 1, viz.:—

2·84	inches	1 mark
2·83	„	2 marks
2·82	„	1 mark.

In other cases we shall find the scales

1, 3, 3, 1;
1, 4, 6, 4, 1;
1, 5, 10, 10, 5, 1; &c.

more useful, as having higher maxima bracing a larger number of answers.

MARKING BY POPULARITY.—But in prac a large class, when the errors are certair and of unknown origin, we shall find number of boys obtaining a particular a often a clue to the number of marks to that answer. Thus, if

2	boys	have answer	6·3
12	„	„	6·4
9	„	„	6·5
1	„	„	6·6

then we shall not be far wrong in giving the 2 boys 2 marks, each of the 12 boys 1 and so on.

This seems mere marking by popula the idea is founded on the theory of prob It is, of course, open to abuse; and if or cooking is suspected the practice abruptly interrupted, either by using a answer (atomic weights are standard a or by the teacher using his own answer Twaddell determination of the S.G. of s to mark specific gravity bottle determinat by setting some question in which the is not the most probable answer (*e.g.*, th of the barometer).

The practice of referring to standard is dangerous—*e.g.*, the sea-water used be of the same strength as that describe books; the sand may not be pure sil thermometers may have shifted their ze they were graduated.

HEIGHT OF BAROMETER.—But the matl theory of errors is founded on the assump the errors are all equal, all equally

kely to be + or −, infinite in number, infinitesimal in magnitude. In practice ırdly the case. Suppose the class have ed to set up mercury barometers, and re the "height of the barometer." The mistake is the inclusion of a small but amount of air, and the corresponding always minus depressing the answer. llarity of the tube is again a universal rror; and if the tubes are of equal these capillarity errors will be equal ut the class, and require from the teacher cretion in using a wide-tube Fortin baro- test answers.

ɔmmon mistakes will be the inexact ad- of the bottom of the scale to the surface ercury, or the treatment of eighths of an he scale as tenths.

ging the answers, the greatest is more be right than the average, because the ɔr is a depression from the limiting value ıe height.

ıeory of errors is not to be pressed in n to experience, but the divergence of from the distribution expected according should help the teacher to detect the ıistakes which his pupils are making. way to detect cooking is to examine, not answer, but some intermediate stage of ing.

ED CURVES.—The testing of diagrams ɔn squared paper is easier when the ıas an accurate mental vision of some ɔmmoner curves, such as the hyperbola ne wave curve. Where the figures are al, like those in the *Nautical Almanac* or miralty Tide Tables," the curves ought to run quite smoothly. All lumps or ill be open to suspicion. Averages from on (such as mean monthly temperatures) ı little lumpy, and daily records can only ı as zigzags; but extreme points are still nquiry.

precise directions are given as to the be used on the axes, the curves drawn hole class from a common source should ly alike, and the eye or tracing-paper kly detect mistakes. The teacher's time in this case, but of course, as a mental the work is better when the pupil has ge his own co-ordinates. The teacher n be prepared to recognise a curve when de down or inside out.

METICAL MISTAKES.—Of arithmetical mis- is hardly necessary to speak, except to that some multiply and others diminish l error of experiment. For instance, in g the barometric readings for a whole he final division by 30 would reduce to n the average an error of a whole inch gle observation. Hence averages which ly correct may demand keen criticism. he calculation of the weight of 1 litre of ɔm the weight of a small flask full is a ation, and if the weighings are not right to within 0·01 gram the answers will be still less trustworthy.

LOOSE PAPER OR NOTE-BOOKS.—For the quick comparison of written work, it is a great advantage to have it done on loose papers, not in note-books. *Per contra*, the standard of neatness is more easily kept up in note-books. As a compromise, the work may be submitted first on loose paper, and afterwards copied if found correct; or, if originally done in the note-books, these may be marked for neatness, completeness, and arrangement; but numerical answers may be read out by the pupils, and written on the blackboard for public inspection and comparison prior to marking. In any case, numerical answers should be kept confidential until all the work of the class has been submitted.

VIVA VOCE.—If the literary style of written answers needs attention, it may be good practice to hear some *viva voce* answers, asking the class for careful, deliberate speaking. The marking of single *viva voce* answers out of 5 as a total (instead of 1 or 0, as is usual) may be made a great encouragement to clear speaking, complete sentences, and to any special literary style we wish to encourage.

SPECIMENS AND APPARATUS.—Specimens may be shown upon small sheets of paper clearly labelled. If these are arranged in trays, all the crystals in one tray, all the precipitates in another tray, and so on, they are easily marked by comparison. Sometimes quick tests (*e.g.*, with litmus paper) will show whether the specimens are pure.

To encourage tidy working at laboratory benches, it is occasionally desirable to walk round and allot marks, say, by deduction from 10, according to the amount of slop, mess, and needless apparatus on the bench.

THE PHONOGRAPH IN MODERN LANGUAGE TEACHING.

By the Rev. A. H. FISH, B.A., B.Sc.
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THE articles by Prof. Rippmann and Dr. Rouse in the April and May numbers of THE SCHOOL WORLD suggest that some further experience of the use of the phonograph may be interesting to teachers. My own acquaintance with the subject dates only from the last summer holidays, and for that and other reasons my knowledge is very far indeed from being that of an expert. I had already found some acquaintance with phonetics exceedingly useful in regulating and supervising the French teaching in my own school, especially in the case of the many boys (and teachers) whose ears were not sufficiently quick, or whose interest was not sufficiently keen, to enable them to learn by simple imitation of a native teacher. But I found myself still confronted by several difficulties. The first was the apparent want of uniformity of pronunciation among native Frenchmen. The second, the much greater want of uniformity in their ex-

planations of our mistakes. The third was the impossibility of getting anything like enough correctly pronounced French to train my own ear to analyse differences which, I felt, existed, but which I could not permanently fix.

I had begun to think of the phonograph as a possibility, when chance threw in my way the opportunity of which I am about to give some account. Early in August of 1905 I found myself in the town of Grenoble, with four or five weeks to spare and no definite plan for their employment. I had always fought shy of holiday courses, but an examination of the Grenoble syllabus, and especially the announcement of the Laboratoire de phonétique expérimentale, directed by M. Théodore Rosset, Maître de Conférences de philologie française, open daily from 6 a.m., decided me to devote to work a holiday which should have been spent on the Alps of the Dauphiné. A holiday course at one French University is probably, with the exception of the Laboratoire de phonétique, very like that at any other. Therefore I will say nothing about the courses provided in literature, nor of the many excellent lectures, which, when not too somnolent from the heat, I heard to my advantage. Of M. Rosset's course on French philology and phonetics, of which, extending as it did over three months, I heard only a part, a word must be said. German in thoroughness and originality, French in lucidity and grace, these lectures were among the most instructive and stimulating I ever heard. Much of the matter, though new to me, would doubtless have been familiar to students of French philology, but the lecturer's use of the "mot phonétique" (the phrase pronounced as one word) to explain difficulties of sound-change and accent-change would, I fancy, be new to most. The majority of the students were from German and Italian Universities; many were French, a few Russian, and still fewer, perhaps not more than half a dozen, English.

At one end of a long deal table in the Laboratoire de phonétique there was a large Edison phonograph, manipulated by a courteous and ever-smiling attendant; from the phonograph, long branched glass and rubber tubes, terminating in pairs of ear-caps; round the table, each with a book in front, and ear-caps in place, a dozen or so men and women; you enter, take your seat, and put on your ear-caps; the attendant indicates the number of the piece being reproduced; when your turn comes, you choose the piece; you can have it repeated a second or a third time. There is a large selection, but the favourites number perhaps a dozen. Thus you hear the same pieces again and again, till you know them by heart. You come and go as you please.

Each student taking the class purchases a book of coupons. Each coupon, costing fifty centimes, admits him to a reading-lesson, in which the student is taken individually by a demonstrator, and reads for about fifteen minutes the extracts which he has previously heard on the phonograph. The demonstrator corrects, critic plains. After a certain number of sud have been taken, and a certain progre the aspirant is allowed to read to M. Ro gives further advice. Always one is s to the phonograph. "Ecoutez, toujours "Le même morceau—cinquante fois n'est pas trop, monsieur."

It might be thought that such a proc soon weary the most enthusiastic stuc the contrary, the more one persevered, one became interested. In the first plac tracts in M. Rosset's book are admirabl and are of great literary interest. Sec one's ear became opened and one's tong the perception of real progress amour keen pleasure, and one worked at on with increasing determination.

Then there were additional attractior shape of demonstrations by M. Rosset, we took part. We were shown how to the artificial palate, to take wax mo construct for ourselves and use artificia We recorded the idiosyncrasies of our and provincial pronunciation of vowels sonants on smoked paper revolving on We compared these against the trace M. Rosset. The eye aided the ear in c our faults. If with all this we still faile or produce a pure sound, there were sources. Silver wires, bent into variou and sterilised in a Bunsen flame, were i into our mouths, and the tongue thus to its proper position. In my own c fermé (under the tonic accent), as in dc the chief offence. It was quite free fro jectionable diphthongal intonation, and my demonstrator all right. But M. Ros have none of it. He insisted that my was the é moyen (as in léser), or the été, and when I failed to hear, as w vocalise, the difference, he compelled so by means of the wire before mentior fortunately, I am on the wrong side of I am afraid that, except perhaps in slow my é fermé will ordinarily remain é mo at any rate I can *hear the distinction.*

The book of exercises compiled by M and used at Grenoble deserves a few w is published by, and may be obtained Librairie Gratier, Grenoble. It consist parts. The first contains exercises upo nunciation of vowels, consonants, &c., prises seventy-two pages. The second extracts of from one to two pages e modern French authors—Renan, Taine, Anatole France, Theuriet, Loti, P. Rostand, Verlaine, Alfred Capus, Ma Edouard Rod, and many others. On th page is given a phonetic transcription, certain peculiarities. The notation a essentially that of the Abbé Rousselo devised solely with regard to the needs phonetics. It has, therefore, for th of French simply, many advantages

Association phonétique internationale. , it has this peculiarity: that the words uped in "mots phonétiques," *i.e.* the hich in pronunciation are sounded as one e written as one; *e.g.* Le but du monde éveloppement de l'esprit, et la première du développement de l'esprit, c'est sa ppears as

l èldevlopmâdlespri, elaprœmyèrkôdisyô dudevlop-sèsaliberté.

sset was good enough to make a number ls for me. These are, of course, made Mechanically, they are not always per-ew words are occasionally blurred. But reproduction is admirable, and they are e pleasantest and most clearly articulated I have come across. I also obtained a he Cambridge series (Mrs. Frazer's). e also direct, that is, not moulded, re-They are not so good as the first men-ut I have found them useful to boys ing French repetition, and the pronuncia-he boys has been distinctly improved by to them. Two points must, however, led to. First, the record should, if pos-heard through rubber tubes and ear-By means of glass or ebonite forks this y be arranged, so that a number of boys at once. Secondly, it is most important speed of reproduction should be as possible that at which the record was f this is not attended to, a most un-effect is produced. This is particularly when the speed is too high. The voice omes most disagreeably shrill and *nasil-* have seen a few turns of the regulating ange an expression of pained horror on of a Frenchman to one of satisfaction, atification.

n to other records. Some of those sup-the Pathé Company seem to us very There are three scenes from Rostand, *de Bergerac*, declaimed by Duparc, e particularly free from phonographic With some little hesitation I direct at-o a remarkable effort in the direction nay be called, perhaps, the phonographic of languages, which comes from These are the courses provided by the onal Correspondence Schools, Scranton, se comprise elaborate courses in French, and Spanish, and are designed for self-n. They can only be obtained in com-, comprising Edison phonograph, thirty-rds, with four text-books, viz., con-al lessons, grammar, reader, and dic-each language. The price of each set os. The larger part of this cost is due honograph, which is very completely recording, as well as for reproducing. so a special repeating device, which is When one set has been obtained the e phonograph is deducted from the price ers. I possess the French and German and have made a pretty thorough ex-amination of them. The type, printing, binding and get-up of the text-books are of an excellence quite unusual in such cases in this country. They are a delight to handle, and an ornament to any book-shelves. The volumes containing the conversational lessons commence with very full instructions for the use and care of the phonograph, and for the making of records.

Each lesson which follows consists of a vocabulary, followed by a set of phrases and sentences. These are found on the corresponding record. Then come explanations and remarks. These are followed by several pages of *viva voce* drill, in which the words and sentences previously given are combined in a great variety of ways. Next we have a couple of pages of review and conversation, in which some fresh words are introduced. Finally, an exercise is given, consisting of phrases to be altered and questions to be answered, the alterations and answers to be recorded on a "blank," and sent to the authors for correction. I speak diffidently of a subject on which I make no claim to be an expert; but I have, unfortunately, a very large acquaintance with English text-books for the study of French and German, and these American books, apart from their special features, compare most favourably with any I know. The English is excellent; there are scarcely any Americanisms; and though extremely suspicious of books of this class, I have failed to detect any serious mistakes. The cylinders are moulded in the Edison factory, and are mechanically nearer perfection than any others I have tried. With regard to the pronunciation (I speak now only of the French), I hesitate to express an opinion. The cylinders *must* be used at exactly the right speed, which is given. When this is attended to, certain defects disappear; whether any remain, and, if so, how far these may be inseparable from phonographic reproduction is at present a matter of discussion between myself and my French master. I should not hesitate to recommend the entire set to any private student desirous of learning French, and if I had time to learn Spanish I should certainly at once procure the books and cylinders for that language.

The whole enterprise is a very remarkable one, and is certainly worth the attention of English teachers and students of languages. The I.C.S. Association, Chancery Lane, London, are the English representatives, and will be very glad to give inquirers an opportunity of hearing the records.

Mechanical reproduction of speech will not supersede the living teacher, but it will undoubtedly help his work. In the first place it will, if he be an Englishman, immensely help to keep his own pronunciation of French or German up to the mark, or, better still, in a condition of improvement. When a language has been learned in childhood it may be possible to keep its sound-forms instinctively permanent, so that they will resist the erosive influence of the constant use of another speech for a long time. But even to this,

as is well known, there are limits. French spoken by Frenchmen who have been long and continuously in England is much more easily understood by Englishmen that that spoken across the Channel. Boys who, having learned from a French governess, pronounce almost perfectly at ten or twelve, come home from public schools with an accent increasingly British. English modern language masters who have resided perhaps one or two years abroad lose in the absence of an audible standard their sense of the finer distinctions, which they have acquired. No form of teaching which depends upon the exercise of the senses can long resist a process of degradation, in the absence of a standard to which one can resort. The private use of the phonograph, then, appears admirably calculated to keep the teacher's ear alive to the distinctions he has acquired, until he can perhaps again refresh it at the original source.

Secondly, I have found an *occasional* use of the phonograph in school to be very useful.

It brings into the class-room, as it were, a breath of French atmosphere, and intonation, pitch, and articulation immediately and unconsciously become less English and more French. I do not think, however, it ought to be used too often. Its regular use is only adapted to keen, persevering, and discriminating boys, who might perhaps be allowed to have voluntary access to it.

Again, it gives the class, and this is by no means to be despised, a certain confidence in their English teacher, and this the more as they notice the closer approximation of his French to that of the phonograph. Further, few of us are perfect or nearly perfect, and I think it is only fair to tell the class, or let the quicker of them find out their teacher's own faults. This has happened more than once in my own case in preparing lessons with the boys, and in every case reference to the French master has supported the phonograph. It may be said, Why not make the reference without the phonograph? The answer is that it is exceedingly difficult to get the necessary repetition of the same unvarying sound. It is the singer's resort to the piano for a note. It gives no trouble, and it does not vary.

Limitations, of course, there are, and possibly some dangers. There is a tendency in too close imitation of many records to a most unpleasant nasalisation or *voix nasillarde*, which seems to be a not uncommon defect among uneducated Frenchmen, and for this and other reasons I would certainly deprecate its use in class by a teacher whose own ear had not become fairly accustomed to good French. Further, as Prof. Rippmann has pointed out, it must not be supposed that, at present at all events, the phonograph can be used as a kind of dictionary for the pronunciation of isolated words. Most of the extracts available are spoken too fast for that. But some exercises which I possess, and some of the vocabularies in the American series referred to above, go very far in this direction. It is not a matter of the rate of the phonograph, but of the rate at which the word is spoken. But in my opinion th ciation of isolated words by a beginner i for close imitation of the position of organs of the teacher, which is impossil tinuous spech. If a good teacher can tained, of course, the phonograph is th stitute.

A HISTORY OF THE SIXTH CE

THIS is the first volume of a monc voted to the life and times of There is no doubt as to the imp the subject; but, like the rest of Byz tory, it has been somewhat neglecte country, and, indeed, those books of C scholars which deal with it are apt themselves to one side of a many-sid The name of Justinian, of course, su the first place law, and, while the lega been naturally from its importance o with, historical and social questions l left somewhat in the background. Mr has not left these out of the account, a seen by the headings of the various s History, Topography, Sociology, Politi cational, and Religious. Under these s contained in two chapters, the state stantinople and the Roman Empire sixth century is sketched. The o chapters describe the careers of the El and Theodora. There are two maps—or stantinople in the sixth century, and o Roman Empire. Mr. Holmes has gone to his authorities, and his statements ported by a large number of notes and ferences. His descriptions are clear, in and generally interesting. We regret to his style is somewhat pretentious, and too much of what we may call (not to fine a point upon it) "tall talk." It giv little shock to read of "snakes emanat the gorgon's head," or "garments tenuity." There is often over-emphasi statements, and a certain amount of pac in the notes. Thus, the note on p. 1 better away, and the note on p. 2 abou Greek newspapers is ludicrously wro Holmes can hardly have read any of th really thinks that an Athenian of the Pericles could read with facility that m jargon. But notes like these are rare, an glad to say that the notes show sound j as a rule, in spite of their exaggerated st would instance p. 100, note 4, which the meaning of the word *follis*, and sh the statements made by Milman, Bury, ar as to the colossal sums distributed Emperor are due to misunderstanding.

Most of this book is introductory. T proper will follow in the succeeding volum reader whose knowledge of the Roman

[1] "The Age of Justinian and Theodora: a History of the Si A.D." By William Gordon Holmes. Vol. i. 363 pp. (Bell.)

th Tiberius, or, at most, with the An- will be particularly interested in the de- ns of Constantinople and its life. A good s been written about the topography of , so that Mr. Holmes's sketch, good it is, and founded on independent study, fill a gap so obvious as that of the social ns. But the excellent account of the will be very welcome. Men and women e streets, in their habit as they lived, fol- their business and their pleasure, or back- r favourite horses, so that we almost see fore us. Valuable, too, is the sketch of so far as it touches the Roman Empire, n we think it quite unnecessary that he out-Gibbon Gibbon in the criticism of nity. Mr. Holmes cannot away with , and in Biblical criticism he seems to he extreme German school, or schools, of

There is a different kind of interest in antic career of the Empress, which reads airy tale. We shall look forward with to the succeeding volumes.

E ENTENTE UNIVERSITAIRE.

he entente diplomatique, the entente municipale, ntente médicale, comes the entente universitaire. step towards the important goal that has been as taken by Miss Williams, the directress of the ternationale in Paris, when she invited the Modern Association, at its annual meeting in December, visit Paris at Easter, 1904. This visit still re- very pleasant memory with all those members on that occasion the guests of the Guilde and ciété des Professeurs de Langues vivantes. The anguage Association felt that they could do no return the hospitality that had been so generously em. The pourparlers for a return visit in 1905 nothing, but by issuing the invitation to our olleagues earlier this year, and by inviting the of London to join in receiving them, the Modern Association has acomplished its desire. The extended the invitation, not only to the Guilde Société, but to the Ministère de l'Instruction the Université de Paris, and the Collège de Directly the Vice-Recteur of the University of nsieur Louis Liard—signified his acceptance, the the visit was assured, and more than 200 re- ves of French education had landed on our shores nd. Among these were MM. Bayet and Rabier, f superior and secondary education respectively; elaque and Firmery, inspecteurs-généraux; MM. Croiset, deans of the Faculties of Sciences and MM. Morel, Garnier, and Delobel, of the Société seurs; and Miss Williams and M. Gautier, of the ternationale.

ning, the hospitality extended to our guests has earty, for some of them must have found London as M. Loubet did when he spent four days here After their arrival on Whit Monday the guests iversity were taken to the Royal Palace Hotel, Association held an informal reception at Uni- llege. On Tuesday the formal business of the n with a reception at the Foreign Office in the where our visitors were welcomed by Lord Fitz- who speaks French as well as his brother, the f Lansdowne, and by Mr. T. Lough, Parlia- mentary Secretary to the Board of Education. There followed lunch at the University of London, presided over by Sir E. Busk, the Vice-Chancellor, at which M. Hovelaque showed his complete knowledge of our idiom in a most felicitous speech of thanks. It is an open secret that it is due to him in France, and to Dr. Heath on our side, that the official interest in this visit was aroused. The lunch was followed by four addresses in the Great Hall. Sir Edward Busk spoke on the debt of English universities to that of Paris; M. Liard explained French secondary education; Sir Arthur Rücker, with his usual clarity and incisiveness, dealt with the recent history of the University of London; while Prof. Michael Sadler, one of the few orators who can arouse enthusiasm on education in this country, spoke of French influence on English education in a speech overflowing with good points, but which had unfortunately to be cut short owing to exigencies of time. In the evening the Association gave a dinner to some of their French colleagues at the Trocadero, while others were entertained privately.

On Wednesday visits were paid to Westminster Abbey and School and to other schools; lunch was taken at Mr. Evan Spicer's at Dulwich, where the school was also visited; and in the evening a reception was held at the French Embassy.

On Thursday there were addresses at the University by M. Croiset, M. Appell, Prof. E. A. Gardner, Dr. A. Waller, Sir William Ramsay, M. Léger (secretary of the Collège de France), M. Benoist (Rector of the University of Montpellier), and M. Morel. In the afternoon the King again showed his diplomatic interest in the entente by receiving the University's guests at Windsor, while those of the Association attended a garden-party at Holloway College. In the evening there was a conversazione at the University, and on Friday the official proceedings closed by visits to Oxford and Cambridge, although several of our guests determined to stay longer, induced, perhaps, by the fine weather they experienced.

The results of this visit must be far-reaching. To those who have never visited these shores it will show that England does not always take its learning sadly, however it may take its pleasures. The scheme for the exchange of teachers must receive a great impulse; the London University holiday courses under Prof. Walter Rippmann's direction will receive an impetus; while in starting and renewing friendships between the teachers of both countries it will cause French and English boys and girls to be influenced for peace and mutual comprehension at a most impressionable age.

Great thanks are due to the Reception Committee for all its hard work, to the chairman, Sir Walter Palmer, to Messrs. F. Storr, A. E. Twentyman, Cloudesley Brereton, and especially to the secretaries, Messrs. P. J. Hartog and W. K. Hill.

Junior Experimental Science. By W. M. Hooton. viii.+ 260 pp. (Clive.) 2*s.* 6*d.*—Mr. Hooton and his colleagues have found that, in the absence of a good class-book, their teaching has proved unsatisfactory, and this volume has been prepared in the hope of saving time and obtaining better results. The book covers the amount of physics and chemistry usually taken in the first two years of a systematic course of science in secondary schools working under the regulations of the Board of Education. The didactic method is adopted, and the explanations are clear and concise. All the illustrations are diagrammatic, and many are too small. Chemical symbols and chemical equations are given much too early in the chapters on chemistry.

HEADMISTRESSES IN CONFERENCE.

THE annual conference of the Incorporated Association of Headmistresses was held on June 8th and 9th at the Clapham High School. Miss F. Gadesden (Blackheath High School), president of the association, delivered the presidential address, and subsequently moved the adoption of the report.

Miss Connolly (Haberdashers' School, Hatcham) opened a discussion on women's suffrage, and proposed a resolution. The debate was well sustained, and resulted in the adoption of the following resolution:—That, in view of the fact that women are directly interested and engaged in the work of education, which is now under the control of the State, it is of ever-increasing importance, on educational as well as other grounds, that sex should no longer be regarded as a barrier to the exercise of the suffrage.

The desirability or otherwise of afternoon school was the next subject before the meeting. Miss Burstall (Manchester High School) moved the resolution, which was eventually adopted unanimously:—That this conference earnestly deprecates any attempt to force compulsory afternoon session on schools now working successfully under the system of a morning session, and unhesitatingly affirms its belief in the principle of freedom for the authorities of each school to arrange the hours of work in accordance with what they have found to be the physical, mental, and social needs of the pupils.

Miss Burstall urged that the arguments for the morning session are the claims of the home, the importance of girls returning home by daylight, their health during the period of growth, and time for organised games or for art-study and music. The claims on girls out of school hours are greater than those on boys, with a corresponding increase of pressure. The attack being made on the long morning has, by a mixture of easier and harder subjects and the system of the interval, been satisfactorily met. It is true there is a strain on the teacher, but that can be minimised by the variety of the work. The ideal of the high schools is, said Miss Burstall, freedom and responsibility—responsibility of the girl for her work, of the mistress for her teaching, of the head for the management. They had, she said, inherited this tradition—they must be true to the trust.

A rider was subsequently added to the resolution:—That this conference instructs the Executive Committee to draw up a memorial on this matter to the Board of Education, and to support it by statistics.

Among the discussions of the second day, that dealing with the kinds of training available for women secondary-school teachers was of particular interest. A resolution proposed by Miss Gavin (Notting Hill High School) was subsequently adopted:—That this association accepts no system of training as satisfactory in which the theoretical work of the student is not supplementary to the practical work.

Miss Gavin said that much now passing current as training is not training, and brought much discredit on the name. The association ought to demand that after a year's training a student should be able to teach in some measure, and not merely take an intelligent interest in her profession. The apparent success of the training given in the training colleges for elementary teachers led to the adoption of a somewhat similar form when the question of training secondary teachers arose thirty years ago. When the young graduate of to-day finishes her university course she knows nothing less than she knows children. What she requires is an opportunity of becoming fa children. The training college fails to provide tunity, even whilst it affords a practising demonstration and practising school, or an op practising in ordinary schools, elementary and are necessary.

The question of the abolition of the Teache led to a long discussion, and numerous resol adopted, some of which are referred to in a the subject in another part of this issue. Th was brought to a close by papers on some re ments in education read by Miss Coulter (Ja School, Dulwich), Miss McCroben (Wakefield H Miss Gray (St. Paul's Girls' School), Miss Lea High School), and Miss Escott (Sheffield High

CONFERENCE AT THE HOMI EDUCATION, AMBLESIDE

By A SPECIAL CORRESPONDENT.

A CONFERENCE of members of the Parent Education Union was held at Ambleside on Ju 4th to discuss the advisability of introducing and lists of books to the notice of schools and h Scale How, Miss Mason's house, has been t many conferences, and for many years there forth from it governesses or teachers of a m We suppose the Parents' Union would not ob assigning them this motto, if, indeed, they have seized on it, "*Debetur puero reverentia max* teaching and training done in this retired Hom tion in the circle of the hills are as old as the selves, but the re-statement of the system rec made continually. To watch children and let t to keep them thoroughly fascinated over books to teach them the use of their eyes, hands, musc them see a good picture, and interpret a sonata an ivy-leaf, and mend a bicycle, and bind themselves, is nothing but common sense; but do not attain unto it. A small number of perso in children—parents, headmasters, headmistre inspectors, and wandering theorists—were asser the work of the students, and to talk over th of extending such work.

Saturday morning was devoted to discussion c of children, of the uses of examinations, and of tion of time spent on the classics. Resolutior voted on, but the speakers all deprecated cra uninterestedness—as speakers invariably do.

On Monday we saw specimens of work. Mo be seen elsewhere, but not the nature-study bo are peculiar to the place; and if no teachi teaching is done, the secret of these books revealed. A girl who cannot paint or draw what she thinks ought to be set down, and di failure. She is told to set down what she sees books are the result. Mr. Ablett, who alwa that we do too much teaching of drawing, wo justified, and it would be a boon if one or t note-books could be reproduced and sold *as s work done by the untaught.* If you ask for you get this reply, which does not help you: quite different here." A French and an Italia rational lines were given, and the conference l with a speech from Mrs. Franklin, the able the union. The note of the speech was the re our discontent with modern education, pr

Bridge and hockey, hooliganism and lady golf
ıe lash. Can nothing be done to increase the
and the mind of nursemaids who neglect
d mothers who neglect nurseries? Only by
widened interest could we hope to succeed.
ailing note in the following speeches was (i.) the
mbleside methods by those who had tried them;
e unwillingness of the actual educator in school
ıd by any syllabuses or lists of books. Indi-
vas evidently the one thing which many speakers
part with, and the union was twitted with a
reach Collectivism, while itself was entirely in-
The usual gibes at examinations, the usual
on of existing books, followed; but we wonder
rs do not write their own books, and prevent
s from being examined. Surely it is not the
ı that is at fault, but the style of examination;
ok, but the reliance on the book. Good books
but they are expensive, and as such are quite
r schools where children assemble in their
The good teacher is still the desideratum; and
he is obtained, his apparatus, which we have
to demand, must be at his elbow. Well might
om an outspoken absentee say that children's
terature is fostered in the school.
d of the resolutions passed showed that con-
the method outlined, and willingness to profit
rience of Scale How, existed in many of those
ı the evening a further paper on the union
y Mrs. Franklin, and a student gave an essay
to illustrate which other students read and

ess of this Home of Education is that of an
Whether this influence be local or personal, or
be that, freed from conventional trammels, the
ıd has time to think, a stranger cannot say;
of doubt is left that the influence is character-
There is an unspoken, but none the less a real,
r the mere frivol of the hour and an appreciа-
beautiful in life. The whole movement is
y that of the new pedagogy in Germany—a re-
ıst Herbartianism; and there seems to be reason
g that every great movement in education and
arries its successor in its sleeve. As in Aricia
was doomed to be slain by his unknown
o possibly our cut-and-dried methods may be
the death-blow dealt by a freer and more child-
. If so, we ought to welcome Ambleside or
orm, and push on the same methods which
y places followed by those who never heard of
dagogy or the Parents' Union; methods which
o perfection, to crystallisation—and to death.

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ience Book. By L. D. Higgins. 237 pp. 6*d*.—This volume resembles very closely the r's "Lessons in Physics" (reviewed in THE ORLD, Vol. VI., p. 119); the chief difference is entration of the chapters on physics and the those on chemistry. We note that several very efinitions in the earlier volume do not reappear one. We are not yet convinced that forty pages ge type are sufficient to give an adequate treat- whole range of magnetism and electricity, in- the simplest facts and explanations of trans- tors, the telephone, &c. Other sections of the en to the same criticism.

GEOMETRICAL AND PROJECTIVE SKETCHING.[1]

A Suggestion to Improve the Teaching of Geometrical and Mechanical Drawing.

By C. B. McElwee,
Instructor in Geometrical and Freehand Drawing, Royal Indian Engineering College, Coopers Hill.

In the graphic representations of the forms of objects having three dimensions, the methods employed are wholly methods of projection, and the projections or drawings usually made are termed "orthographic" projections or plan and elevation drawings to distinguish them from "perspective" projections or pictorial drawings.

The execution and comprehension of orthographic projections or plan and elevation drawings present many difficulties to the pupil and often to those who use them professionally, and this is true whether the drawings represent problems and theorems in solid geometry, elements and essentials relating to many branches of science, or objects and constructions used in the arts. Indeed, it is not too much to say that the progress of a pupil in these departments of modern education is very often stunted, and in some cases even impaired, through no other cause than the inability to make and understand the projected drawings which are necessarily involved in their study.

The chief difficulties which arise in connection with orthographically projected drawings may be attributed, first, to the fact that the drawings do not represent the form of an object as it would appear when visible to the eye; secondly, to want of sufficient practice in drawing to enable the drawings to be produced with even tolerable accuracy; and thirdly, to an incomplete knowledge of the constructions used in practical plane geometry.

The first difficulty can be overcome by making a study of pictorial drawings or drawings representing objects as they appear to the eye, and by making drawings of this class in conjunction and simultaneously with the study of orthographically projected drawings, thereby causing the mind to become accustomed to recognise in the projected drawings the "appearance" or the "essential identity" of the object so represented.

As to the second difficulty, if drawings representing the appearance of an object are made by the unaided hand only, and not with the aid of mathematical instruments, sufficient practice in drawing will be gained to enable the pupil to execute tolerably accurate projected drawings. Of course it will be understood that, according to the present practice, projected drawings are executed with the aid of such instruments, indeed, modern practice places exclusive reliance for accuracy in them. This accuracy may be conceded as attainable, if the instruments are properly used; but apart from the fact that they are frequently not properly used, I urge strongly that their constant use is unnecessary, and, indeed, harmful to the pupil.

To turn to the first of these difficulties, it must be apparent to all who have had any experience in teaching orthographic projection, either in its principles or in its many applications in science and in the arts, that a pictorial illustration is a very necessary auxiliary to enable the pupil to "conceive" or "mentally realise" in an orthographically projected drawing the "appearance" or the "essential identity" of the form of an object possess-

[1] Abridged from a paper read at a meeting of the Royal Drawing Society. The original paper is entered at Stationers' Hall.

ing three dimensions, and thus to understand the locations and relations to each other of its parts. It is, however, to be regretted that, excluding perspective, the illustrations usually placed in the hands of the pupil do not represent objects as they actually appear to the eye, and the constructions used, if any, in the production of these illustrations are not based on any sound or scientific principles of "perspective" projection or pictorial drawing. Such illustrations may be termed "pseudo-pictorial drawings," and they are usually, if not always, confined to "isometric" or "oblique" projections, the methods and initial principles of which the pupil intuitively does not understand.

Isometric, or, I would prefer to say, "monometric" projections, as well as "dimetric" and "trimetric" projections, are the "orthographic" projections of forms possessing three rectangular axes, when these axes are situated in particular positions with regard to the plane of projection. In the same sense the orthographic projections of forms of any kind situated in any possible position with regard to the plane of projection might reasonably be called "multimetric" projections, and with regard to such projections I maintain that, as a rule, the pupil does not understand the method of their production. Oblique projections are produced by projecting obliquely to a plane of projection. The conception of this kind of projection presents many more difficulties to the pupil than orthographic projection, and the only logical definition, from a pictorial point of view, which could be applied to it is as follows: "If the rays of the sun be projected obliquely to a plane, the *shadow* of an object 'in skeleton' on that plane is its *picture*."

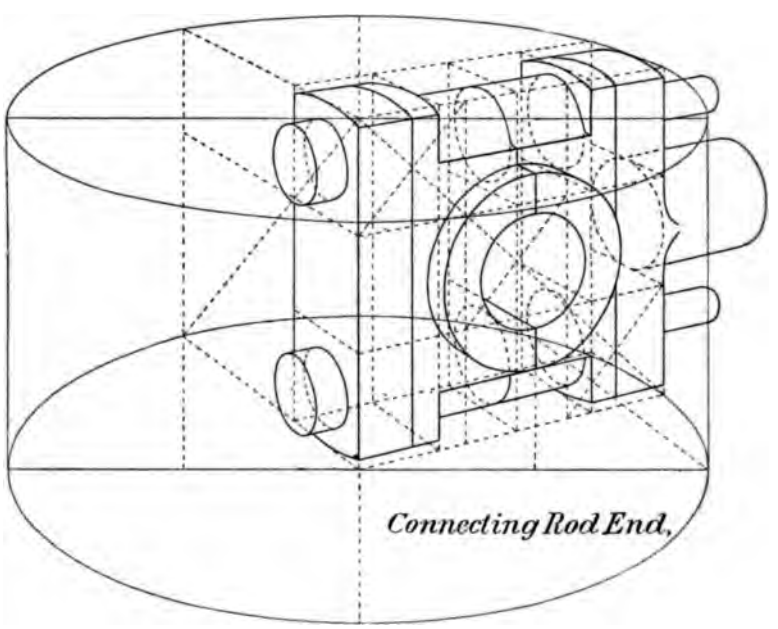

FIG. 1.

Are the introduction and use of isometric and oblique projections as methods of pictorial expression educational? Artistically they may tend to warp and stultify any development of the power of observation and pictorial expression to be found in the pupil, and scientifically they may instil principles which to some appear to violate the mathematical laws involved in the construction of a true perspective projection.

Looking at this matter from a philosophical point of view, if pupils are to be educated to conceive or realise mentally in an orthographically projected drawing the appearance or the essential identity of a form of three dimensions, and the locations and relations to each other of its parts, they must be given an illustration of the true and natural appearance of the object or its parts, so that when the real object is viewed in nature, *i.e.* in perspective, there may be no doubt in the mind of the pup the true form of the object, and at the same ti as to the essential difference between its pe presentation and the "scale" drawings whi orthographic projections of it.

There are very many methods of producing drawing. Amongst them may be mentioned of *direct projection*, the *mixed* or architect's most perfect of all, the method of *direct pers* the constructions used by the expert draughts methods are such that the ordinary pupil ca pected to understand them thoroughly and advantage until he is equipped with a fai knowledge of the properties of "the three or in other words of solid geometry, and of projection and observation drawing.

Therefore, if the beginner is to be put in po method of perspective which he can readily and use in producing a perspective drawing, must be as simple and as concise as possible, a pers is to in conj an ically drawin view c materi tion o object in th drawin It is ally k all, tha betwee *graphi* tions of a c plane graphi jected practic not ex to the project angles similar radii

original circle which the ellipse represen spective. The slight difference which exists respective values of these angles varies acco position of the original angles to be projected, to their magnitude. When determined by calculation it never exceeds, on an average, minutes of a degree in any angle. For practi this difference may be regarded as infinitesi drawing or sketching the two sets of angles sidered to be equal.

In view of this fact it is possible to deter simple constructions the perspective value of a drawing or sketch, and in conjunction with of measurement of lines known in perspecti diagonal method of measurement" it is possi the perspective representation of any form pos dimensions.

It would be difficult in an article of this to describe in full the details of the many ver

imilated constructions which can be devised out
wo principles. I must therefore be content to say
ve found it possible to frame a complete system
of perspective which can be placed in the hands
not yet familiar with projected drawings of any
is such that the principles involved can be learned
observation from simple models, and as know-
eases these principles can be applied in producing
tive drawing in conjunction with a plan and
or projected drawing. Further, when the pupil
ie stage at which he may begin the study of
perspective projection he will find that this
nd the principles on which it is based, are still

eat feature of the method is that mathematical
s can be dispensed with, and all constructions
executed
unaided
only.
eature is
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g points"
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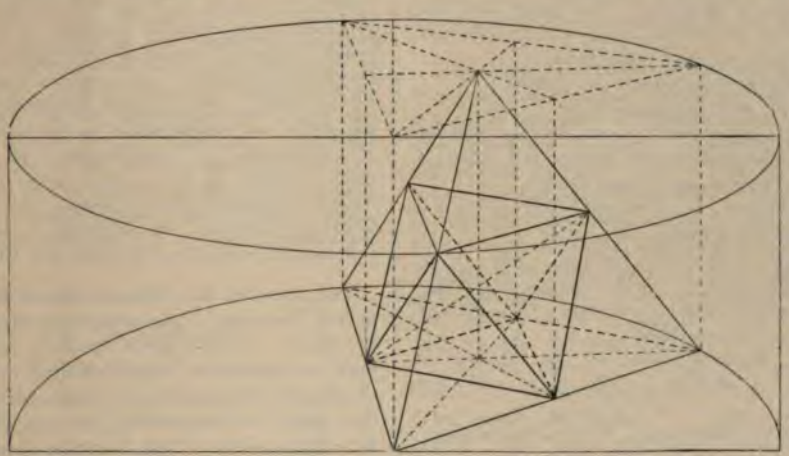

Fig. 2.

(viz. that form alone in which such object
r to the human perception), and as a further
e hand is trained to follow the mind in
a representation of such form. From an
l point of view both these results are most

d two illustrations of drawings which have been
in "class work" in order that any doubts re-
e possibilities of such a method may be dispelled.
Fig. 1) is that of a simple mechanical detail, and
rawing is produced in conjunction with the ortho-
projected drawings of the same detail. The
a perspective drawing of this nature cannot be
ted. One constantly finds in reports pertaining
ical drawing examinations complaints regarding
d unskilful drawing and inability to apply geo-
rinciples or recognise "one object" in "two or
ographically projected views."
lity to make a perspective drawing of the nature
n should leave no doubt on these questions. In
tion, skill in drawing and ability to read and
d orthographically projected drawings are very
features, both of which are not always attained
ing devoted to mechanical drafting with mathe-
struments only.
ond illustration (Fig. 2) is that of a tetrahedron
bed octahedron. This illustration shows the appli-
the method of perspective in illustrating problems
eoretical and practical solid geometry. Additions
could be made to this particular example to illustrate a cube and the two inscribed tetrahedrons, showing the part common to both tetrahedrons to be an octahedron. A drawing of this nature should help to make clear many points which, as a rule, do not appeal to the average pupil.

I might add that my system of perspective lends itself to the illustration and solution of problems relating to the intersection of solids or "interpenetration," a branch of projected drawing essentially necessary in mechanical or engineering work, but which is very rarely realised or understood.

In conclusion, I might point out that this method of perspective or "geometrical and projective sketching" is not intended to supersede or supplant any other method of teaching drawing. Indeed, I must impress on my readers that a certain amount of skill in observation drawing is necessary before the pupil can derive any real benefit by its use. The method of drawing should be treated wholly from a mathematical point of view, and on no account should it be presented to a pupil before reaching that stage in which it may be found useful and helpful in educating him to see accurately, represent and read, or think of, the form of objects possessing three dimensions, or of the locations and relations to each other of its parts.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

Set Subjects for July and December, 1907.

Religious Knowledge:—*Preliminary.*—(*a*) St. Matthew i.–xiv.; or (for Jewish Students only) I. Kings ix.–end.

(*b*) Exodus i.–xx.

Juniors.—(*a*) Genesis xii.–xxiv., xxvii.–xxxv., xxxvii., xxxix.–end; Exodus i.–xx.

(*b*) St. Matthew; or (for Jewish Students only) I. Kings.

(*c*) The Acts of the Apostles i.–xv.

Seniors.—(*a*), (*b*), as Juniors, (*c*) Acts i.–xv., (*d*) Galatians.

English Language and Literature:—*Preliminary.*—(*c*) Defoe, "Robinson Crusoe," Part I. (from Robinson Crusoe's first landing on the island to his departure from it); or (*d*) Macaulay, "Horatius," "Lake Regillus," and "The Armada."

Juniors.—(*b*) Shakespeare, "As You Like It."

(*c*) Scott, "The Talisman."

(*d*) A paper of questions of a general, not a detailed, character, on Goldsmith, "The Traveller" and "The Deserted Village," and Southey, "Life of Nelson."

Seniors.—(*b*) Shakespeare, "As You Like It."

(*c*) Milton, "Paradise Lost," i., ii., 1–628.

(*d*) A paper of questions of a general, not a detailed, character, on Shakespeare, "King Lear," Scott, "The Talisman," Gray, Poems."

HISTORY, GEOGRAPHY, &c. :—*Preliminary.*—History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1485, (*b*) 1485 to 1603, (*c*) 1603 to 1714 respectively.

Geography. Great Britain; and general Geography.

Juniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1509, (*b*) 1509 to 1688, (*c*) 1688 to 1832 respectively;

or (*b*) Outlines of the History of the British Empire from A.D. 1763 to A.D. 1878;

or (*c*) Outlines of Roman History from B.C. 133 to B.C. 44.

(*d*) Geography The United Kingdom of Great Britain and Ireland and America, south of Mexico.

Seniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 55 B.C. to 1509 A.D., (*b*) 1509 to 1714, (*c*) 1714 to 1867 respectively

or (*b*) History of the British Empire as Juniors;

or (*c*) Greek History, B.C. 359 to B.C. 323.

(*d*) Geography. The paper will consist of four Sections on (*a*) Great Britain and Ireland, (*b*) Europe, (*c*) America, south of Mexico, (*d*) Australasia, respectively.

LATIN :—*Preliminary.*—G. M. Edwards, "Horatius and other Stories (University Press).

Juniors.—(*a*) Caesar, "de Bello Gallico," VII., 1–33; (*b*) Caesar, "de Bello Gallico," VII., 34–67; (*c*) Virgil, "Aeneid," IX., 1–449; (*d*) Virgil, "Aeneid," IX., 367–818.

Any two of these four to be taken.

Seniors.—Caesar, "de Bello Civili," I.; or Cicero, "de Senectute." Virgil, "Aeneid," IX.; or Horace, "Epistles," I.

GREEK :—*Preliminary.*—Marchant, "First Greek Reader" (Bell), pp. 1–27

Juniors.—(*a*) Xenophon, "Anabasis," VI., 1–3; (*b*) Xenophon, Anabasis," VI., 4–6; (*c*) Euripides, "Iphigenia in Aulis," 1–750 (omitting 1–48, 164–302, 543–606); (*d*) Euripides, "Iphigenia in Aulis," 801–1474 (omitting 1036–1097, 1279–1335).

Any two of these four to be taken.

Seniors.—Herodotus, V., 28–91; or Demosthenes, "Philippics,". i., ii. Homer, "Iliad," XXIII.; or Euripides, "Iphigenia in Aulis."

FRENCH :—*Juniors.*—Malot, "Remi en Angleterre."

Seniors.—Corneille, "Le Cid"; De Vigny, "La Canne de Jonc."

GERMAN :—*Juniors.*—Hauff, "Der Scheik von Alessandria und seine Sklaven."

Seniors.—Schiller, "Wilhelm Tell"; Sybel, "Prinz Eugen von Savoyen."

MUSIC :—*Seniors.*—Parry's "Studies of Great Composers," Chapters 5–7.

The Ideal Junior Poetry Book. 62 pp. (Relfe.) 6*d.*—This is a good selection of verse for reading and repetition, though whether it is "ideal" depend somewha upon other conditions than a publisher's announcemen. It is certainly praiseworthy and is likely both to be useful and popular, and nobody can grumble at the price. It is perhaps noteworthy that James Montgomery is selected for the poet who opens the volume; and in the notes he is described as characterised by "deep feeling, generous and enlightened morality, and picturesque language." Shade of Macaulay!

HISTORY AND CURRENT EV

IT has been found impossible to give defi factory enough for scientific purposes for tho —so important in the history of Europe—Chur The two institutions have had so many obje methods, in common, that the relations be whether in the world of practical politics c speculative science, have proved the Sph politicians in all ages. The occasion for the comes to us from the United States of Ame we learn that the Government of that coun missioned Dr. Eastman, himself a Sioux, to individuals of that nation in order that they that their ultimate destiny is citizenship and the American people." We are reminded o of olden times. Abram became Abraham, J Israel, to express a new idea in race and r enthusiasts for classical learning in the fiftee teenth centuries translated their names into Gr Desiderius, Erasmus, *e.g.*, are Latin and Greel for Gerhard. Melanchthon translates Schwa too, when one is admitted into the Greek or La of Christendom a "new name" is given. tells us much of this "new name" in con Asiatic Worship in the first century of our era. States of America are learning a lesson fro enthusiasms which can develop new Churches c

THE death of Mr. Michael Davitt has direct to his life-career of hatred to the British Em its works. To the great majority of us this hard to understand, largely because it is given of us "to see ourselves as others see us." Bu like these are wholesome, like the parade of an Egyptian feast. The hatred of race for race embodied specially in the hatred of an indivi race for the whole of another, is not unknown The Pharaoh of the Exodus intended the destru Israelites. Darius swore to destroy the Athenia one knows the story of young Hannibal, sw father at his country's altar to destroy Ro the counter-policy embodied in the words "I Carthago." As Hannibal against Rome, so P Spain was dedicated by *his* father to fight for it is singular that both these life-careers we Maria Theresia's lifelong struggle to be aven loss of Silesia is another illustration of the sa But the greatest perhaps of all in modern ti great Napoleon's titanic efforts to destroy the shopkeepers." "I hate you, I hate you, is all say."

THE Russian Duma has already come sl collision with the Tsar and his Ministers, and, of writing, there is apparently a direct conflict on the land question, the most important of economic or political, in that country. Thus ou of last May are beginning to get an answer, waiting to see how the conflict will develop. in the seventeenth century t was a question of the bottom and the control of the militia on that led to the outbreak of civil war. It was t of ecclesiastical lands at the bottom and the Bohemia on the surface that led to the Thirty in Germany. . . . We note also that there are Duma of diversity of race interests, and some "decentralisation," but disclaim all ideas of "

nemberment." Surely Russia, like Austria- is too big, too diversified, to succeed with only ament. It is as much as ever we can manage and, and the United States of America have to d in their schools to Americanise their varied immigrants. The French Revolution had to t its republic "one and indivisible."

cussion in the House of Commons in the middle ay on the second reading of the Plural Voting an interesting illustration of the nature of our nstitution. It is a growth, not a ready-made t was not founded, like the constitutions of all opean countries, on ideal principles which the shed to have carried out into practice. Coming ence in the Middle Ages so gradually and un- that evidence is all but lacking for the deter- of many of the most important of its stages, it sible to dispute as to the nature of the House of even after the Reform and Redistribution Acts t century. Whom or what do the members of e represent? Do they represent individuals? or or classes? In the beginning, they were the f estates, groups of the community important be consulted. Now, in all cases but the uni- the groups are crushed together in localities. change was made slowly, and without philo- hought. And thus we still do not "know our-

ITEMS OF INTEREST.

GENERAL.

oard of Education regulations for secondary r the year from August 1st next to July 31st, e now been published. In a prefatory memor- r. Morant says that it has been thought desirable aking alterations of substance in the regulations initiation of the other changes necessitated in with the increase of Exchequer grants in aid ry schools which has been promised, and is pro- in the Estimates for this year. Important f principle, it is explained, inevitably arise as he allocation of the increased grants and the or ineligibility of various types of secondary r State aid, which require careful investigation, nvolve discussion in Parliament. For this reason ied or supplementary regulations on which the ts will depend will not be issued until a later

y substantial change in the conditions of recog- grants laid down in previous regulations concerns acy of teaching power in the schools. As regards sses, the rule has been formally laid down that er of scholars in a class should be limited to d must in no case exceed thirty-five. Respecting ency of the staff in qualification, notice is given July 31st, 1907, the Board may require that proportion of the staff shall have gone through of training recognised by the Board for the pur- e kind of training to be required, and the institu- hich it should be received, are, the memorandum o say, matters on which the Board is not yet tion to lay down any definite rules. Sanction ever, be granted for the recognition of persons mes have been entered on Column B of the Register.

A NEW chapter has been added to the regulations laying down rules under which any secondary school may be recognised on application as an efficient secondary school. A school providing the kind of education, and reaching the standard of efficiency, required in the case of schools recognised for grants may, if the school authorities so desire, obtain this recognition, although on other grounds it is not qualified, or does not wish to apply, for grants from the Board. Recognition will only be given on the result of a full inspection, which will be held if the Board is satisfied from the preliminary information obtained that there is a *prima facie* case for recognition, and will be without charge to the school. The Board proposes to publish periodically lists of recognised schools in order to assist local authorities in their survey of the existing provision for higher education and in framing schemes for aiding, co-ordinating, and supplementing it. The memorandum concludes with an abbreviated summary of the introduction to the regulations of last year.

THE recent lamentable accident at the Preparatory School, Dulwich, has brought forcibly to our minds the fact that miniature rifles are capable of inflicting fatal injuries, and it is important for every schoolmaster to see that proper regulations for safety are strictly enforced on his school range. These regulations are comparatively simple, but it is important that they should be well known. It must be set down as an axiom that any gun with a cartridge in it is liable to be discharged, and such a gun should be pointed, and kept pointed, at the target, and at the target only, until the cartridge is extracted. All the rules for the conduct of safe shooting may be summed up in the words: "Open the breech." "When your gun is fired—open the breech." "When you take it from the shoulder without firing—open the breech." "After a mis-fire—open the breech," and, above all, do so while the gun is still pointing at the butt.

THERE lie before us three newspaper accounts of the inquest on the Dulwich tragedy; they give no assistance to the schoolmaster inquiring how similar accidents may be avoided, and they are probably all inaccurate. No. 1 states that the cartridge exploded "*in the magazine*," implying that a magazine rifle was used; this we believe was not the case; magazine weapons should never be used on school ranges. The writer probably means "in the chamber." No. 2 states that the boys were sitting on a form "behind the target"; this is manifestly absurd; the writer probably means "behind the firing-point." In No. 3 the coroner is stated to have said that a loaded rifle should be pointed in the air or to the ground. With this we do not agree at all; a shot-gun may be pointed in the air, where the charge may scatter, *but not a rifle*. A loaded rifle may be pointed carefully into soft ground, but in a school playground, which is always hard, and possibly paved, there is danger from a ricochet or a splash (was this accident due to a ricochet? The inquest gives no clue). There is only one safe place to which a loaded rifle may be pointed, and that is the place to which it is meant to be pointed, viz. the butt, and the rifle must be kept pointed at the butt from the insertion of the cartridge until its extraction. It should be considered as an act of deliberate disobedience to insert a cartridge or to touch any part of the mechanism while the rifle is pointing elsewhere than to the butt. If these precautions are observed, and the most scrupulous care and respect for the rifle inculcated, parents need be under no anxiety about their boys learning to shoot.

MANY miniature rifles are little better than toys, and some of foreign make are not of the best material; a worn striker or a softened spring may produce a mis-fire. We ourselves have known a case in which the cartridge failed to fire and the extractor failed to act; in this case the only thing to do was to insert a cleaning rod from the muzzle to knock out the cartridge, *still keeping the rifle pointed at the butt*. It is hoped, now that more miniature rifles of English manufacture are being made, that such faults will not recur. Beginners with the rifle have a tendency in loading to pull the rifle over towards the left; this should be watched and corrected.

THANKS to the generous distribution of copies of the valuable report of his Educational Commission to the United States, Mr. Alfred Mosely's name is known to teachers and other educationists everywhere. Many teachers will gladly avail themselves of the opportunity to visit the schools of the United States and of Canada which the latest public-spirited scheme arranged by Mr. Mosely offers them. The object of the scheme is to allow to members of the teaching profession in Great Britain facilities for seeing and studying on the spot the American and Canadian educational systems, at a nominal cost, independently or in small groups. Owing to the generosity of the steamship companies, between the months of November and March next some five hundred teachers will be conveyed across the Atlantic to the United States or Canada and back for a return fare of £5 each.

THE steamship companies will grant these facilities during the months of November to March next inclusive. Each steamer sailing from Liverpool and Southampton will take a certain limited number. Teachers desiring to visit Canada will proceed there direct by the Canadian Pacific Line. President N. Murray Butler, head of Columbia University, New York, will, in conjunction with Superintendent Maxwell (of the Board of Education, New York), prepare itineraries for the visitors in advance, and give them all particulars of what to see and how to set about it. They have also arranged that committees shall meet the travellers on arrival and conduct them to quarters of moderate cost previously secured. It is earnestly to be hoped that local authorities and others controlling education will grant teachers leave of absence and pay their salaries during the time they are away from school, so that the fullest advantage may be taken of this unique opportunity offered to teachers to compare for themselves American or Canadian educational methods with those in operation here, at a minimum of cost. Local authorities and applicants for passages should apply in the first instance to Mr. Alfred Mosely, Union Bank Buildings, Ely Place, London, E.C.

IN reply to Sir William Anson, who asked, in a question placed on the Order Paper of the House of Commons, whether the Board of Education has come to any decision as to the extension of the certificated teacher's undertaking of service to service in schools other than elementary, and, if the decision is in favour of such extension, when it will be announced, Mr. Birrell said the Board has come to the conclusion that it is desirable to allow such declaration of service to be fulfilled by service in any State-aided or rate-aided school, including therein schools other than elementary. The insertion of a provision in the Board's regulations for training colleges to carry out that intention is, however, unavoidably delayed pending the solution of the difficulties which surround the question of any scheme for securing from the teacher a guaranteed period of teaching service, as proposed by the Co Committee. While, therefore, the view of the the point referred to in the question may be s announced, it must not be understood that all of consequential to it, and essential to carrying i yet completely settled.

AN announcement has been made that if the Education is satisfied that the expenditure of a l tion authority under Part 3 of the Education during the year ended March 31st last, was suc expenditure met, or to be met, by rates exceed duce of a rate of eighteenpence in the pound, may make, in addition to any other grants, a sp equal to three-fourths of the excess. This applies to England and Wales.

AN agreement for the mutual recognition of has been arrived at between the Universitie chester, Liverpool, Leeds, and Sheffield Joint M Board and the Universities of Oxford and This Joint Matriculation Board will grant exen its matriculation examination to persons who l Responsions at Oxford with one additional have passed parts i. and ii. of the Previous E at Cambridge with one of the additional subje certain conditions as to subjects taken, exempti be granted to holders of certificates of the C Cambridge Senior Local examinations.

A GENERAL meeting of the National Associat Promotion of Technical and Secondary Educati on June 15th, when the Duke of Devonshire p the report, subsequently adopted by the m executive committee refers to the Education Bill of which, the report states, threatens serious da interests of secondary and technical education. is the one which will enable the council of a bo than a metropolitan borough, with a populatic or upwards, and the council of an urban distric the same population limit, to apply to the Boar tion to be put in the position of a local educati for higher education, and provides that th Education may make an order accordingly a a public inquiry. "It is very questionable, mittee states, "whether a borough or urbar the size contemplated can make provision to educational requirements of the area. It is co-operation of a large community that adequ for higher technical education can be provid total isolation of the larger non-county borough districts is not only bad for themselves, but adjoining districts of the power to acquire which they need."

IN presenting the report, the Duke of De that the society has been embarrassed grea years by the contraction of its resources. T difficulty has been met by the raising of a and by grants by the Royal Commissioners fo tion of 1851. These two sources of income ca on permanently, and if the operations of the a to be continued it is absolutely necessary th from £300 to £400 per annum shall be raise to its present income. When the association nearly twenty years ago it was the only ag promotion and organisation of technical instr country. Largely owing, however, to the ex association itself the position has been compl Parliament, the Government, the local authori

his question, and thus the original object of the has to a great extent been accomplished. The is no longer necessary to stimulate interest in ducation or to promote legislation. It has, how- me a centre to which local authorities engaged rk are accustomed to look for advice and inform- e quarterly *Record* of the association has also tly appreciated by local authorities, and the f its publication would be keenly felt. Much of is evidently such as might be performed, though what different manner, by a Government depart- e Duke of Devonshire suggested that the execu- ittee should ascertain how far the Board of would go in the direction of assuming the func- h the association has hitherto discharged. If it found that those functions can be more usefully by a private association than by a Government t the committee should consider how to secure mount of assistance from the public.

aordinary general meeting of the Incorporated n of Assistant-Mistresses in Public Secondary as held on May 26th at King Edward's High Girls, Birmingham. A memorial to the Presi- e Board of Education disapproving the abolition achers' Register was approved. The memorial d the benefits which, in the opinion of the , have resulted from the Register, and expressed t desire that the possibilities of usefulness in- the registration movement should receive due n, and, in lieu of the step of abandoning the means might be taken to reconstruct it and to ts development on lines acceptable to the pro- a whole and consistent with permanent efficiency. cussion also took place on the question of Suffrage. Papers were read by Miss Laurie on tance of plant geography in the teaching of d by Miss Vernon Harcourt on a visit to some Germany and France.

ncil of the Association of Teachers in Technical has adopted a series of resolutions respecting ed technological high school at South Kensing- Council is of opinion that the work of the new should be confined to technical research and ate work generally. The conditions of admission, esolution maintains, should be framed so that um age of students entering the college should en years, and all should be required to give f three years' previous satisfactory training after ached the standard of general education repre- university matriculation. There should be, the rther thinks, a greater element of public control overning body than is suggested in the recent ntal Committee's report, and the institution permanently independent of university control.

ssian Minister for Education will, it is under- sent to the Duma shortly a Bill to provide for elementary education, asking for £11,200,000 to the new system.

. Sidney Jones, senior mathematical master at College School, London, has been appointed r of Cheltenham Grammar School.

ev. E. C. Sherwood, senior science master at ter School, has been appointed headmaster of the tern College, Ramsgate.

The result of the Second Division examination, held in March, 1906, shows that 70 of 1,021 candidates have obtained appointments, or about one in fourteen. Service marks obtained places for sixteen boy clerks who would not otherwise have been successful; by the aid of service marks, the same proportion of boy clerks as of outside candidates obtained appointments. The Commissioners announce that an examination will be held, commencing on October 1st, for not fewer than eighty appointments in the Second Division. The subjects of examination were published in The School World, Vol. VIII., p. 71, together with the syllabus in mathematics; the geography scheme will be found on p. 32 of the same volume. The Commissioners announce also that after this year the age limits for these examinations are to be taken on March 1st for an examination held in the first six months of the year, and on September 1st for an examination held in the second half of the year.

SCOTTISH.

The new regulations for the training of teachers, after a long period of incubation, have at last assumed final form, and have been laid as a Minute on the table of the Houses of Parliament. It is satisfactory to find that the new provisions, which deal with the qualifications of secondary-school teachers, are framed to suit actual conditions, whereas the original seemed drafted for an ideal, and, we fear, far distant, future. The candidate on probation stage, which was strongly opposed in these columns, has disappeared, and is replaced, as suggested, by a liberal bursary scheme to give secondary education to all capable pupils, whether candidates for the teaching profession or not. The regulations cannot come into effect until four weeks after their presentation to Parliament, and in the interval are subject to review by either House; but it is not expected that any modifications will be made in them.

The education question has bulked largely in the debates of the May Assemblies. The two topics round which discussion has centred were the new regulations for the training of teachers and the transference of the church training colleges to the new provincial committees. In regard to the former there was a good deal of divergence of opinion, but on the whole the attitude was friendly. In regard to the transference of the training colleges, it was stated that negotiations were going on satisfactorily, though there exists a marked difference of opinion on the question of the responsibility for the religious instruction of the students. The representatives of the provincial committees, apparently at the instigation of the Education Department, thought that this work should not be undertaken by them, but continued by the church as hitherto, and they would grant all reasonable facilities for carrying it on. The church representatives, on the other hand, wished the new committees to be responsible for the work. They hold that the Scottish system of education is a combined system of religious and secular education which are interwoven one with another, and to separate them in the way desired by the provincial sub-committees would set up a line of demarcation that has never previously existed. No settlement has yet been arrived at, but it will be intolerable if, through any over-zeal for logical consistency on the part of the provincial committees, a "religious difficulty" is created when none has previously been known. If the committees are to take over the training colleges, they ought also to take over with them all the duties at present belonging to them.

THE *Glasgow Herald*, in a leader discussing the report on education in Scotland, takes up towards the teaching profession an attitude that is, fortunately, becoming characteristic of the Press in all large centres. The following extracts represent the spirit of the whole article:—"If the labour of the teacher who comes earlier than anyone else outside of the family in contact with a young mind is to be regarded as not of the least but of the first importance, then the hire which will be worthy of the teacher will have to be, not greatly, but vastly, increased. It is probably beyond all question that owing to the superior inducements of other and more remunerative professions, that of the teacher is no longer recruited by such talent as it was formerly able to command. Unless the old quality can again be secured, the prospects for teachers and—what is more important—for pupils is by no means good." The article goes on to commend to the educational authorities in this country the principles laid down by the Prussian Government in instituting their system of national education. "In order to secure good teachers for the schools, it is necessary that, before everything else, care be taken that they have a proper maintenance"; and so "in every Act regulating German schools, as in all Acts up to 1872 regulating Scotch schools, pensions at a fixed rate are secured for all teachers who have to retire at a fixed age."

PROF. G. G. RAMSAY, who has occupied the Humanity Chair in Glasgow University for the past forty-five years, has intimated his resignation to the University Court. Prof. Ramsay during all that time has been an outstanding figure in the University. As students usually came to his class in their first year, the responsibility rested on him of licking into shape these untutored cubs of learning, and this duty he discharged with a very evident relish to himself, if not always to the students, and with an effectiveness that smoothed the path of his less robust colleagues. For this reason Prof. Ramsay was held in awe by all new comers, but was regarded by his second-year students and all others with affection and admiration. He did much to maintain the traditional connection between town and gown, and took his full share in the civic life of the community. His interest in education extended far beyond the limits of his university chair. He took a prominent part in the management of Allan Glen's and Hutchison Grammar School, and on several occasions has opposed strongly and successfully the policy of the Education Department. The Classical Association was his pet scheme of recent years, and its success is chiefly due to the personal enthusiasm and energy of Prof. Ramsay, who is its perpetual president.

AN appeal has been made to the Chancellor of the Exchequer by the Scottish Liberal M.P.'s on behalf of the necessitous schools in Scotland. A grant of £135,000 has recently been allocated to such schools in England, but not one penny has been given to Scotland, although it has no fewer than sixty-five school districts with a school rate of 1s. 6d. and over. The Scottish members in their memorial hint that this is their reward for not being obstreperous. "They have not agitated noisily, have not refused to pay rates, and have been neither active nor passive resisters. There has been no strike of teachers. All they have done is to make peaceful representations to their members of Parliament, but these are quite as worthy of being listened to as more noisy protests." The Scottish Liberal M.P.'s must be a simple folk if they think to charm money out of the Treasury Cerberus by even the smoothest of words and the strongest of cases. In these strenuou watchword is "agitate," and a threat to financial clauses of the present Education Bill a much more effective weapon than all the their command. The memorial further poin £100,000 a year has recently been voted to university colleges without a single penny com land. In addition, the present Education Bill devote one million pounds for the use of Ch in England, while Scotland took over the Ch in 1872 without getting any assistance from Treasury. The Liberal M.P.'s threaten to re questions later on, but it is safe to say that th no success unless they put a little more "steel attitude.

AN exhibition to illustrate the various metho ing home geography is to be held in the Out Edinburgh, from July 6th to the 14th. The be based on the regional geography of the Ed trict, and will comprise a collection of local models, simple apparatus for the construction the field, and for making easy astronomical logical observations. Such an exhibition shoul greatest value at the present time, when so m has been aroused in regard to the methods a of geography teaching.

IRISH.

THE debate in the House of Commons on M produced a result unprecedented in Irish secon tion. The Rules and Programme for 1907, commented on last month in this column, a and at present it is impossible to say what will be. By the Act of Parliament, the new Programme, after being signed by the Lord must lie on the table of the House of Com many days, and, failing objection within tha become valid for the ensuing year. This year happened. Mr. T. O'Donnell moved an ad that the Royal assent should be withheld fr rules until they were amended in two parti new rules propose that a student, to pass the as a whole, must pass in one of three lang than English), viz. Latin, French, or Ge O'Donnell proposed that Irish should be put with these three. His other proposal was compulsory subjects for students competing fo and prizes in the experimental science course, the special courses in domestic economy, and i and hygiene, as alternatives to one of the courses of experimental science and drawing. course in physics, chemistry or mechanics, o botany. Mr. Bryce supported the proposals, a accepted by the House without a division. mediate Commissioners have refused to accep the difficulty will apparently be solved by co another year the rules for 1905–6, which Mr since explained will be laid on the table of t time to comply with the necessary regulatio rises on August 4th.

THE question arises: Should the House of encouraged to interfere in purely technical que kind? It no doubt has the right, and Mr. B his support. But we venture to think he treat mediate Board with scant courtesy. He st had no control over the Board, and had suggest what rules it should make. This is ha

t place, the Commissioners have all been
y the Government, and have been chosen as
authorities. The Government, therefore, can
vn them, and in a matter of this kind a new
takes over the responsibility from its pre-
econdly, and this is more important, the Lord
whose Chief Secretary Mr. Bryce is, has
ied the Rules and Programme and given them
sanction. The Government had missed its
for making suggestions, and if the Government
its mind it should openly say so, and not dis-
sibility. On the ground of the inconvenience it
, Mr. Bryce should have refused to accept Mr.
motion, and have stated his willingness to
vs before the Board with a view to an alter-
rules either in this or a subsequent year. On
question whether Irish should be placed on a
Latin, French, and German, this is not the
er, but it may be added that any student is at
ke Irish as an optional subject.

l Commission to inquire into Trinity College,
the University of Dublin, has been appointed.
ssioners are: Rt. Hon. Sir Edward Fry (chair-
Hon. Christopher Palles, Sir T. Raleigh, Sir
ter, Dr. H. Jackson, Dr. S. H. Butcher, Dr.
de, Prof. D. J. Coffey, and Mr. S. B. Kelleher.
of reference are: to inquire into and report
esent state of Trinity College, Dublin, and of
ity of Dublin, including the revenues of the
of any of its officers, and their application;
of government of the University and of the
system of instruction in the college and the
whom it is conducted; the system of university
, and the provision made for post-graduate
he encouragement of research; and also to
report upon the place which Trinity College,
the University of Dublin, now hold as organs
r education in Ireland, and the steps proper
to increase their usefulness to the country.
communication adds that this inquiry will be
ry to the Royal Commission appointed in
to consider the condition of higher education
Ireland outside Trinity College, Dublin. The
is a strong one. Two names have caused
se, that of Dr. Douglas Hyde, who is the
the Gaelic League, and that of Mr. Kelleher,
minated by Trinity College, and is the only
olic fellow, having been elected so recently as

osed abolition of the Teachers' Register has
strong protests from Irish secondary-school
he Association of Women Graduates has drawn
which it has asked all registered Irish teachers
be forwarded to the Chief Secretary. The
Guild and the Central Association of Irish
sses have also forwarded protests to Mr.
Ir. Birrell. There is no doubt that registration,
t officially acknowledged in Ireland, has in-
n of good influence, and Irish teachers look
ts official recognition there at no distant period.
of no effectual substitute.

A College has been celebrating this June its
iversary. It may thus claim to be of older
an any of the women's colleges at Oxford or
Its work has been mainly in connection with
niversity, and has been in many ways affected by the recent opening of Trinity College to women. At the Commemoration on June 1st, when Lady Aberdeen gave away the prizes, the Warden, the Dean of St. Patrick's, appealed for Government assistance, which Mr. Bryce, who afterwards spoke, hoped it might be possible to give. An interesting address was also delivered by Prof. Butcher. In the evening a ladies' dinner was held, and the following afternoon there was a garden-party at the Vice-Regal Lodge.

The report of the Department of Agriculture and Technical Instruction for 1905 contains some interesting particulars of the development of its work in technical instruction. This comes under two heads: (1) the organisation of a system of instruction in day secondary schools in such subjects as experimental science, drawing, domestic economy, and manual instruction; and (2) the organisation of technical instruction properly so called, under local authorities. The former may be regarded as now well developed. It has been established for four years; it has become an essential part of the curriculum of almost every secondary school in Ireland, and is taking in secondary education the position it was designed to take. With regard to the latter, there is still much to be done. In 1901 there was—outside the county boroughs—scarcely a technical school in Ireland. Now a large number have been established, and there are schools in thirty urban districts. The county schemes and the combined urban and county schemes are also working satisfactorily. The number of students in urban districts has increased from 11,465 in 1901–2 to 17,737 in 1904–5. The greatest need in urban centres at present is suitable and permanent buildings in which to continue and develop the work. The Commission to inquire into the working of the Department has been sitting in Dublin, and the earliest witnesses have been the secretary, Mr. Gill, and the assistant secretary, Mr. Geo. Fletcher.

WELSH.

The Drafting Committee for the proposed National Council of Education has been held at Llandrindod Wells. The great difficulty, of course, is the question of representation. The suggestion is to have a Council of not less than ninety or more than ninety-five, and that the proportion of representation be fixed and adjusted by the King in Council, under these conditions:—(*a*) That the county councils, the county boroughs, and the urban district councils of Glamorgan and Monmouthshire shall together have a majority of one on the Council; (*b*) that the meetings of the Council shall be peripatetic and held in South, North, and Mid Wales alternately, unless and until otherwise resolved by a majority of at least two-thirds voting on the question; and (*c*) that each Welsh county council, county borough, and urban district council the population of which exceeds 50,000 shall have one representative on the Executive of the Council, with an additional representative for each 100,000 or part thereof after 100,000. This basis secures a majority on the Council for the two larger counties, whilst the smaller counties obtain a majority of one in the constitution of the Executive of twenty-seven members.

From the educational point of view, of perhaps more importance is the suggestion of a consultative committtee which shall report to the Council on any matter referred to it, and shall have power to advise the Council on any educational questions. The consultative committee shall consist of such a number of members of the Council as the Council thinks fit, and of (*a*) two persons appointed

by the University of Wales; (b) one person appointed by the University College of Wales, Aberystwyth; (c) one person appointed by the University College of North Wales; (d) one person appointed by the University College of South Wales and Monmouthshire; (e) two head teachers in secondary schools in Wales appointed by the Council; (f) two head teachers in public elementary schools in Wales appointed by the Council; (g) one person appointed by the Council of the National Museum of Wales; (h) one person appointed by the Council of the National Library of Wales; and (i) such a number of persons of experience in education and acquainted with the needs of the colleges, schools, and other educational institutions in Wales as the Council may think fit, provided that at least two of such persons shall be women.

It seems that the question is being raised in Wales as to whether the system of intermediate education cannot be too much "inspected." One headmaster has recently complained of having had, within a short space of time, five inspections, three in three weeks. "The supposition was that they were intended to benefit the school, but he did not think the school benefited one single scrap by them, except by one. The other four were purely a waste of money and a farce." It appears that four of these inspections were by the Board of Education, and one by the Central Welsh Board. One point the teachers would probably like to know about the new National Council for Wales is: Will the inspections be organised, as well as the schools?

In England we are accustomed to associate youth only as scholars in the Sunday schools. Not so in Wales. Surely Wales is right—for education is conterminous with life. It may seem undignified to continue to go to school when one is grown up, but to continue one's education through life is the only sound view. In North Wales a lady has established the custom of presenting medals to the oldest six Sunday-school scholars. The awards have recently been made, to people whose ages were as follows: 84, 84, 83, 83, 83, 90, 89; and the years of membership of the Sunday school were respectively 81, 81, 80, 80, 81, 85.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Elementary French Accidence with Exercises. By G. H. Clarke and W. G. Griffiths. 108 pp. (Brown.) 1*s.* 3*d.* net. The greater part of the book is taken up by a succinct statement of the chief facts of the accidence; the rest consists of twenty pages of English sentences to be translated into French, and a vocabulary. There is really nothing fresh about the book. We even seem to have met before this the statement in the preface that "there is no royal road to learning."

Grammaire Française Élémentaire. By W. M. Poole. viii. + 120 pp. (Murray.) 2*s.* 6*d.*—This is a careful piece of work, presented in an attractive form. All that is important in the accidence and syntax is gathered into seventy pages of clear type, and is followed by capital exercises on reform lines. The book is intended for younger pupils than the *Grammaire Française* which Mr. Poole wrote some years ago in collaboration with M. Becker.

Intermediate French. By L. C. Jacq (Ginn.) 2*s.*—This book hails from America, v presumably be used by pupils preparing for valent to our matriculation. It contains Fre largely of a philosophical and abstract char passages based on these, some "exercises review," and a good vocabulary. It is to that the matter is not more varied, and it c that the book supplies a want.

Nouvelle Grammaire Française. By J. xii. + 188 pp. (Methuen.) 2*s.*—We are gett Americans call "an elegant sufficiency" grammars written in French for English pu must at once add that Mr. Anderson's boo great deal that is of interest. We are incl that his introduction on French pronunci written in English, is nevertheless too difficult owing to excessive condensation. The beginr nothing of it, and to the expert it naturall familiar matter. The treatment of accidenc deserves the careful attention of teachers, a suggestive and sometimes illuminating. The very judiciously chosen, and the teacher will fi useful.

Elementary French Grammar. By Dr. Third edition, revised by C. T. Onions. (Nutt.) 2*s.*—Mr. Onions has now brought tl line with his recent revision of Otto's large versation grammar. He has rewritten the se with the pronunciation, and in the vocabular is now accompanied by a phonetic transcript in of the Association Phonétique International have been well to add also some of the exer script. As for the Gaspey-Otto-Sauer method, known as a typical translation method to call here.

Bell's First French Reader. By R. P. Athe 78 pp. (Bell.) 1*s.*—This is a nicely printed forty-eight short pieces in prose and verse, many authors, and almost as varied in value trations. There are footnotes, mainly in sections of connected words. It is satisfactory growing attention is being paid to the acq useful stock of words. We also welcome M decision to give no French-English or E vocabulary, but we regret that he continues the value of composition for beginners. Th careful piece of work, and deserves commenda

Materials for French Prose Composition. Fifth edition, revised by C. T. Onions. (Nutt.) 2*s.* 6*d.*—Mr. Onions has subjected th thorough revision, and thereby increased its va ably. Reform teachers might utilise some o for free compositions.

P. J. Stahl, Les Aventures de Tom Pouce H. H. Horton. 46 pp. (Blackie.) 4*d.*—T version of the Tom Thumb story is suitable their second or third year of instruction; but have preferred notes in French, or no notes a provided deal mainly with elementary gram renderings of the text. We note a few mi (p. 9), *des* (p. 11, l. 6), *crayons* (p. 15, l. 23 (p. 19, l. 24), *petit* (p. 31, l. 9), *qui* (p. 31, l.

J. N. Bouilly, L'Abbé de l'Épée. Edited Hartog. 90 pp. (Blackie.) 8*d.*—A very sentir

id-water type, which hardly deserves to be read
The notes are adequate and generally trust-
are interested to learn that D'Alembert "ascer-
quantity of the terrestrial axis." That was
n.

sset, Croisilles et Poèmes Choisies. Edited by
og. 71 pp. (Rivingtons.) 1*s*.—A simple little
few well-known poems; brief notes in French;
nsisting of questions in French on the text,
uggestions for composition; and, we regret to
es for re-translation. We have no room for a
misprints we noticed; Mr. Hartog will doubt-
re careful in time. We must, however, ask
Williams to give us something better than these
for she has done much better work before this.
of Croisilles, with squashed nose and game leg,
bout to sling the twopenny loaf at the end of
to the water, is enough to prevent one from
story; but the second picture is perhaps even

hoisies de La Fontaine. Edited by W. G.
; pp. (Rivingtons.) 1*s*.—Mr. Hartog has
nty-four of the best-known fables, and has
nch explanatory notes and exercises, consisting
on the text, to be answered in French, sugges-
ritten exercises, short passages for translation
, and a vocabulary. This work is, on the
done. The proof, as we have noticed before
Mr. Hartog's books, has not been read with
re. We have noticed misprints on p. 14
, p. 15 (*rongèe*), p. 30 (*croquer*), p. 35
p. 50 (*lasserènt*), p. 54 (*française*), p. 72
ruger), not to mention faulty punctuation and
l spellings, which only confuse pupils, such as
tenoit (p. 4), *très-fort* (p. 8), *pesans* (p. 11).
lary appears to be complete. There are three
ge illustrations by Miss Mary Williams. A
t of La Fontaine might well have been added;
pity not to give pupils some idea of the man
s they are reading.

nche, Organe de la Guilde Internationale.
la Sorbonne, Paris.) Abonnement: France,
an; Étranger, 9.50 francs par an; le numéro,
—We congratulate the *Guilde* on its enterprise
his attractive journal, a symbol of the *entente*
ween French and English teachers of languages.
interesting articles and reviews, hints for candi-
ring for examinations in English, details of
French literature for foreigners, &c. We trust
Manche will have a long and prosperous life.

Classics.

id of Virgil, with a Translation. By Charles
In two volumes. 310+336 pp. (Arnold.)
he classical student will look on these volumes
; they remind one of olden days when authors
le in their editions of the immortals. These
e beautifully printed on fine paper in large,
and with ample margins. The work is not
with a flourish of trumpets, but left to stand
merits; and the only introduction of a personal
the dedication to the translator's daughter,
a name familiar to all readers of Virgil. We
ed of that other father and daughter who
in making what is, perhaps, the best com-
the Aeneid—Dr. James Henry and Miss Henry.
We have no hint as to the texts which Mr. Billson uses; he prints the Latin text opposite the English; but he does so, we imagine, rather as an aid to the reader than as an attempt at independent criticism. The English translation is in blank verse, and is contained in the same number of lines as the original; every point in the original is attempted to be reproduced, even to the incomplete lines. Considering the nature of the English and Latin languages, this implies severe compression, and sometimes the omission of unimportant details. But Mr. Billson's skill is great, and very little indeed is left out. The compression, however, has an effect on the rhythm, which is rather stiff, especially in the rapid passages. The style is severely simple, eschewing all manner of affected characteristics; but, at the same time, it must be admitted it does miss a good deal of Virgil's delicacy. Nevertheless, it can be read with real satisfaction, and is, indeed, a remarkable feat. Mr. Billson is evidently a good scholar, and on that score will satisfy the exacting reader. We may conclude with a specimen taken almost at random, for the workmanship is good throughout.

V, 500.

"Then each with all his strength the bended bow
Strings, and the weapons from his quiver draws:
And first Hippocoon's arrow through the sky
Sped from the shrilling cord, and cut the air,
And struck and in the wooden mast stood fixed.
The mast was shaken, and the affrighted bird
Fluttered, and widely rang the loud applause.
Then Mnestheus keen stood forth and drew the bow,
High-aiming, and with eye and shaft at one.
The bird, alas! his arrow failed to reach,
Which sundered yet the knots and hempen bonds
That tied her foot, and held her from the mast.
She to the winds and stormy clouds took flight.
Then swift Eurytion, who had kept his shaft
Long on the string, and prayed his brother's help,
Saw in the void rejoicing, and transfixed
Beneath a sable cloud the winging dove.
She fell, and in her body fixed the shaft
Brought back, but left her spirit with the stars."

Plautus, Captivi. With Introduction, Notes, and Vocabulary. By the Rev. J. Henson. xxiv.+136 pp. (Blackie.) 2*s*.—Those who are old enough to read Plautus ought to have a Latin dictionary; and we are amazed to see a vocabulary added to this book. It is one more sign of the opportunism which reigns in the school world, and the general lack of any definite principles on the part of teachers. The same lack of principles is seen in the editor's work. He has, for example, a section on prosody, without explaining the principles of difference between Plautine metre and its Greek model, or the influence of the Latin word-accent upon the Greek rules. Mr. Henson seems to imagine that the metrical *ictus* is responsible for the shortening of long vowels (p. 16), whereas it was the word-accent which Plautus generally makes to coincide with the *ictus*. The paragraphs on metre (p. 17) are so vague as to be useless; it is just the principle of Plautus's "very definite rules of metre" which needs explaining. In details there is the same inaccuracy. What syllables ending in *m* were "long" in Plautus's day? What is the consonantal value of *u* (p. xvi.)? The first vowels of *fŭimus* and *Ăccheruns* are given as examples of "terminations"; and no reason is given why terminations afterwards short, such as *auctior*, should be long in Plautus. What is to be made of such a statement as this:

"The vowels *-i* and *-u* [*sic*] are treated sometimes as consonants, *e.g.*, 197, *fwrstis*. This consonantal treatment of *-u* [*sic*] gives us such forms as *sis* for *si uis*, *sultis* for *si uoltis*." Was the first word, then, pronounced as *fwistis* (with *w*); and, if so, why is the *u* marked long? And was *si uis* pronounced *sywis*? What does it all mean? If *sis* implies anything as to *u*, it is rather that *u* was so slurred as to be inaudible; but it was a consonant, anyhow. In the notes are many things which need correction. Thus the Plautine phrase for "don't make any mistake" is *ne frustra sis*, not *ne erres* (14); *nimis quam* is not *quam nimis*, but the *quam* is indefinite like *πως* (102); *eccum eccos* contains a shortened enclitic form of *eum eos* (169); *dixeram* is a preterite in 194, not a pluperfect, one of Plautus's characteristic idioms; Greek *θ* was not pronounced like English *th*, as the note on 274 seems to imply; *seruitutem seruit* (334), like all such phrases when the cognate accusative has no adjective, is intensive; *sedulo* is not connected with *sedeo* (385); if one thing is certain about *dĭrectus*, it is that it is not derived from *dis ērectus* (636).

Euripides: the Medea and Hippolytus. With Introduction, Translations, and Notes. By Sydney Waterlow. xviii.+206 pp. (Dent.) 2*s.* 6*d.* net.—This book is the first of a new "Greek and Latin Series" which Messrs. Dent are publishing. There are no doubt a number of persons who like their crib to be printed opposite the text, as it is here; personally, we prefer to take our Greek and our English neat and separately. It does not appear whether Mr. Dent is to give English readers just a taste of each author, or complete editions: in fact, the aim of the series is not quite clear. We should much prefer to have the texts without the introduction. Mr. Waterlow's introduction is readable enough, true; but ten pages is not enough to discuss Euripides, not even enough for the literary and psychological questions which arise out of the two plays. Critical notes, too, should be placed at the foot of the text, not at the end. The translation is not always accurate in details; *e.g.*, there is no reference to the speaker in *οὐσα δυσμενὴς* (*Medea*, 866), which is rendered "for all we are so at odds"; *ὀργάς* (870) is "moods," not "outbursts"; *λευκὴν παρηίδα* (1148) is not "lovely face." The style is a natural modern colloquial, and was no doubt chosen on purpose to represent that of Euripides. It is far from affectation, but errs sometimes in the use of long Latin words which recall the daily press. "Not that I would complain of your previous behaviour," says Jason to Medea, as if he were a Cabinet Minister speaking of a great proconsul. The effect is really quite funny at times; but much of it is surprisingly good and idiomatic. The print is small, but clear, and the book is well got up. A frontispiece is the bust of Euripides from Naples.

The Philoctetes of Sophocles. With a Commentary abridged from the larger edition of Sir R. C. Jebb. By Dr. E. S. Shuckburgh. xliv.+228 pp. (Cambridge University Press.) 4*s.*—We have already noticed the abridged editions of the *Antigone* and *Oedipus Coloneus*. The merits of Sir R. Jebb's edition are so well known that they need no praise from us; and this abridgment will probably be just the thing for the undergraduate or the sixth-form boy preparing for an examination. It is not the thing, however, for the ordinary schoolboy, for whose use an edition should be specially made, containing much less than this, but in some respects more. We should not have said this but that we feel sure it will be used by the ordinary schoolboy, since neither he nor his masters know what is good for him.

English.

Andrew Marvell. By Augustine Birrell. millan.) 2*s.* net.—Mr. Birrell has added to t number of biographies of Marvell now extant is quite worthy both of himself and his subj a great deal of this volume is concerned wi of Marvell's day, and this somewhat thorn been handled in these pages with much sk tion. Indeed, it is not easy to determine w Marvell's career remains more vivid in t reader at the close of the volume, the man satirist, or the quiet, conscientious member of Commons. Suffice it to say that in t Marvell is here faithfully dealt with, and fewer "Birrellisms" sprinkled on these p might expect from their author, the bool interesting, and is a distinct and happy a series in which it appears.

The English Writings of Abraham Cowle Waller. viii.+467 pp. (Cambridge Univ 4*s.* 6*d.* net.—This is likely to be for many the standard edition of Cowley's English p a volume is to follow containing his English plays, a measure of justice will be dealt t which he has long deserved and been deni has been prepared with great care, and t worthy of high praise in respect of its gene and serviceableness, to say nothing of its s trustworthiness. This volume contains the " "The Mistress," the "Pindarique Odes," th and the "Verses written on Several Occa contribution to the classics of English liter therefore, command respectful attention, an possession of any person of scholarly tastes, to imagine that any desire to supplant it arise.

Forty Bible Lessons and Forty Illustrativ R. M. Brown. 254 pp. 3*s.* 6*d.* (H. R. A volume has been written and compiled for interesting children under, say, twelve yea will probably succeed in a notable degree ir purpose; for this impressionable period is a tunity for sowing all kinds of stories in y and these selected stories of the Bible are the presentation they receive in these pages not only to teach facts, but also to teach the lying each story in this volume; and the me is, first to get the occurrence well fixed in th of childhood, then by aid of a little verse (a "memory gem") to fasten it there, and some manual exercise or "occupation" to enforce it still further (for the children are to acts), and lastly, by means of a simple chi make the whole process secure. A book so painstakingly produced ought to meet with r acceptance. It is not in the least "viewy blessing!

Old Testament History. By G. Car (Relfe.) 2*s.*—This is an excellent way of history of Israel from the descent of Jacob the rejection of King Saul. The text is ta Revised Version, and all the episodes are pr actual words of Scripture. For class-work ment may be described as invaluable, and book will tend immensely to facilitate the a a clear idea of the outline of Jewish history with which it deals. The notes, the short

phical sketches have been well done, and the well repay use. It ought to be followed by ling with the later Jewish history on the same

of Job. By Canon S. R. Driver. xxxvi.+ Clarendon Press.) *2s. 6d.* net.—This is a tempt so to explain the text of the Revised to make this biblical drama intelligible to the ucated reader. It must be conceded that many disappear altogether under Canon Driver's treatment, and the convenient, handy form of ought quickly to make it *the* popular com- on this Book. The notes are as condensed as e text is divided into paragraphs with an argu- d to each; difficulties are explained and prefer- tive readings are indicated; and an excellent added. A detailed examination of this little possible here, but the points we have noted fficient to recommend it to the class for whom tten; and Canon Driver's scholarship should it a lasting popularity.

or School Boys and School Girls. By W. o pp. (Oliphant, Anderson and Ferrier.) *2s.* legant little book is the outcome of an attempt genuine piety to the spiritual needs of young is written from the point of view of what on used to say he failed to grasp when people personal" religion. That is to say, it is ic piety which is inculcated in these pages; hor's effort commands respect, even if one's by no means circumscribed by the orthodox n of the writer. It may be commended even us who have long ceased to be attracted by on of any kind.

Writers. By W. P. Trent. xx.+524 pp. (The o.) *5s.* net.—This is a volume of selections in erse. It is an American volume, and is prin- ned for the use of classes in the Southern uld it find its way into English schools over d probably be found useful, for the knowledge literature which obtains in England is com- nall—limited, as a matter of fact, to O. W. gfellow, Mark Twain, and a few humourists. volume introduces readers to a large number who are all but unknown, even by name, on the Atlantic; and while it is perhaps highly s an introduction to the history of America tion of American literature, it makes a read- an intensely interesting nature. Brief bio- d critical notices of the authors drawn upon each selection, and the statesmen and orators hern States contribute a handsome share to

s English. By H. W. F. and F. G. F. 1–370 don Press.) *6s.*—This book, which is the of "The Queen's English," "The Dean's Errors in English," and others, is nothing s admirably done. The scheme is very simple. s have a chapter on vocabulary, one on syntax, s and graces," and one on punctuation. All essary, but, if we might have had a word, the apters would have been lengthened at the e others. The second part consists of sections quotation, grammar, meaning, ambiguity, well done by clear thinkers and plain speakers. There is, as one would expect, some hair-splitting; there are many statements to which the reader will take strong exception, but there is, so far as we can see, only one injustice. It will not do, notwithstanding an explanation in the preface, to quote *Daily Telegraph* correspondence as *Daily Telegraph*. When "*Daily Telegraph*" is added to any statement, the statement is understood as being made on the authority of the paper; no newspaper can suffer the syntax of its correspondents to go forth to the world as its own. Will these compilers confer a further benefit on the public by compiling from books, newspapers, and debates "The King's Logic"?

Coriolanus. By A. W. Verity. xxxvi.+308 pp. (Cambridge University Press.) *3s.*—Mr. Verity in this volume continues his notable contributions to Shakespearean literature in an edition of this play which is almost ideally perfect. Of his labours as an editor of Shakespeare enough is now known to ensure any volume in this wonderful series all the appreciation it merits. This volume reproduces all the familiar features of the series, and it is interesting to note points in which the present editor owes something to the great work of Prof. Bradley. The section of the introduction which deals with the Elizabethan "colouring" in this tragedy is well worth attention,. as are also all the notes and the extracts for North's Plutarch, and the appendix on dramatic irony. This volume is as good as anything Mr. Verity has done.

Selections from Prescott. By Oliphant Smeaton. xvi.+ 269 pp. (Dent.) *1s.* net.—We are inclined to give great credit to the compiler of this volume, not only because he has, from a purely literary point of view, done his work well, but because he has managed to hit upon an original idea for a reading-book. Prescott is read by those of mature years, but he is little known to boys and girls. Yet he belonged to that school of historians who, whatever their deficiencies in scientific equipment, knew how to make history interesting. Mr. Smeaton has strung together a number of Prescott's more exciting episodes in the form of a continuous narrative, and supplies a very readable introduction. Altogether the volume is of great interest, and lends distinction to the series in which it appears.

The Psalter in English Verse. By John Keble. With an introduction by the Archbishop of Armagh. 444 pp. *Essays from the Spectator.* A collection of Steele's and of Addison's papers on the minor morals, made by W. A. Lewis Bettany. 431 pp. *Poems by Christina Rossetti.* With an introduction by Alice Meynell. 200 pp. (Blackie's Red Letter Library.) *2s. 6d.* net each.—We have often expressed our appreciation of the volumes in this daintily produced series. It is only necessary to say of the latest additions to what has become a favourite collection of classical masterpieces that they are well chosen and maintain the reputation for beauty and general excellence won by previous volumes in the library.

Matthew Arnold's Merope, to which is appended the Electra of Sophocles, translated by Robert Whitelaw. By Prof. J. Churton Collins. vi.+169 pp. (Clarendon Press.) *3s. 6d.*—This elaborate and scholarly edition will be welcome to the general reader who may wish to know in detail what typical Greek tragedies were like, and also for students in schools. In these pages it is possible to study both these selected works with care and thoroughness, for Prof. Collins has spared no pains to make this book a satisfactory introduction for those who would

desire an acquaintance with Attic tragedy in its most perfect form. The metrical schemes of the choruses are deserving of close attention.

Poetic Gems. vi.+184 pp. (Chambers.)—There are many points about this little compilation which are worthy of praise, and not the least of them is the success with which it fulfils its aim of being "a selection of good poetry for young readers." In its present form it includes four parts, each of which can also be purchased separately; and these are so graded as to appeal to children ranging from ten to fourteen years old or so. Many old favourites are included in this collection, and also some pieces less widely known; but it is all excellent matter, and admirably adapted for memorising. We should like to point out that the note on Will Carleton on p. 181 would be much more satisfactory if it cleared up the confusion likely to arise between this writer, who is comparatively unknown, and Will Carleton the Irish novelist, whose fame is world-wide.

History

The Industrial History of the United States. By K. Coman. xviii.+343+xxiv. pp. (The Macmillan Co.) 5*s.* net.—This book comes to us from America, with the wealth of illustrations, bibliography, and references to which we are now so well accustomed. To the youngest students, American history is too difficult as a whole, because of its modern and constitutional character. Even, therefore, in the early colonising days, and much more in later times, elementary books of American history give the impression that there is nothing but fighting. Books for somewhat older scholars convey the idea that Americans are all lawyers, interested in political rights and wrongs. It is only when these stages are passed, and some idea of economics is possible, that such a book as this tells the inner story of American life. Religion and commerce are still the motives of mankind, and here we have, told in clear language, the economic forces which have built up the nation known as the United States of America. Miss Coman leads us from the America of aborigines, through the periods of discovery and colonisation, through the struggle over customs and excise which led to the War of Independence, and so to modern tariffs and trusts. The book is full of matter, and is eminently useful as a guide to the understanding, not only of historical, but of present-day politics.

The Story of our Native Land and Empire. 264 pp. (Blackie.) 1*s.* 6*d.*—This is Book VI. of a concentric series of "Complete History Readers." It is well illustrated, and is supplied with summaries of the chapters and with notes and explanations. The story is correctly told, and is mainly devoted to the later stages of the narrative. The first half brings us to the death of William III., and the second to the accession of King Edward.

Rights and Duties of Citizenship. By W. D. Aston. 113 pp. (Clive.) 1*s.* 6*d.*—The chapters in this booklet are headed respectively: the Nature of Citizenship, the Citizen's Standing before the Law, the General Rights of Citizenship, the General Duties of Citizenship, Local Government and Administration, the Organisation of Elementary Education, Central Government and Administration, the Judicial System, the Army and Navy. Mr. Aston writes well and pleasantly on these subjects. There is perhaps too much "liberty" and an obvious adaptation to the requirements of the Teachers' Preliminary Certificate examination. But many who are not candidates, as well *as those* who are, will profit by the perusal of this book.

A School History of Somerset. By W. Rayr 217 pp. (Methuen.) 1*s.* 6*d.*—We have already or three volumes in this series, and this is a predecessors. There is the same abundance of and good topical history. In this latter respe on Somerset is better than the others. It is l of that part of England called Somerset an local history. The boys and girls of Somers from its pages to take an interest in that whi them.

A Century of Continental History, 1780–188 Rose. xii.+481 pp. (Stanford.) 6*s.*—This edition of Dr. Rose's book. He has altered f some phrases, and revised some of his judgme also made additions, partly of additional para ends of the chapters, but mainly consisting ment descriptive of events up to the year supplement has been written cautiously, for Dr. the difficulty of writing almost contemporary h

Readings in European History. By J. H Vol. II. xxxii.+629 pp. (Ginn.) 7*s.*—We noticed Prof. Robinson's first volume, whicl the Middle Ages. This, the second volume consisting of "extracts from the sources cho purpose of illustrating the progress of culture Europe since the German invasions," covers from the Renaissance to the present day. ation for the reviewer is to think of what is when we consider the long period covered, events in every age, the superabundance of m able, we prefer to express our thanks for w rather than dwell on the necessary omissi selections are translated. There is a suffic commentary, and there is an index as well contents. Memoirs, contemporary or nearly histories, official documents, &c., are drawn variety than it is possible to describe without which would degenerate into a mere catalogu reflection occurs for adverse criticism. Wh ask, if we are to travel beyond the purely does Prof. Robinson give us, in his last illustrations of "natural science" and science," and not also of religion, literatu But, with all its omissions, we heartily rec volume, as we recommended its predecessor, t teacher of history. It will help him to real it will serve as illustrations for his classes.

Mathematics.

Symbolic Logic and its Applications. By H xi.+141 pp. (Longmans.) 4*s.* 6*d.* net.—The is usually considered to be even less attract of mathematics, while symbolic logic is still ated. At the same time, it ought to be m recognised by teachers of mathematics that so frequently claimed for mathematical studies imperfect unless the teacher has himself rec logical training; there is good evidence, even recent text-books, that mathematicians are o breaches of the most ordinary logical cano logic is a comparatively recent development, not unlikely to become a weapon of consid It would not be easy to find a better introd subject than the book under notice—the wo the chief pioneers in a difficult but interesting

Algebra. By Herbert E. Hawkes. xiii.+ Ginn.) 6*s.* 6*d.*—The title of this book is some- tious. The first 150 pages do not, so far as the ter is concerned, go outside the limits of many ientary treatises; the topics that are of a more haracter are practically restricted to the chapters x Numbers, Theory of Equations, and Deter- ough a slight sketch is given of Continued Frac- there are two pages on Probability. The best the book seem to us to be those that deal with considerable attention is paid to the question ivalence of two systems of equations, and the pter on the theory gives useful hints regarding of numerical equations. The style is through- and the book is well adapted for pupils who y made some progress in algebra and who wish ne insight into more advanced parts of the sub- ay be added that answers are not given.

ry Graphic Statics and the Use of Tables of Tangents to Four Places of Decimals. By ythe. 16 pp. (paper covers). The size of the $1\frac{1}{16}$in. × $8\frac{7}{16}$in. (Simpkin, Marshall.) 1*s.* 6*d.*— preparing for elementary examinations, such as and Cambridge Local examinations, the notes will be found exceedingly helpful. The examples ntly varied and the instructions in regard to ails connected with the drawing and interpret- grams are clear and to the point.

"Method" Arithmetics. Parts I., II., III., Pitman.)—Part I. deals with Addition and Sub- art II. with Multiplication and Division; Part Long Division, Simple Reduction of Money, d Subtraction of Money; and Part IV. chiefly lication, Division and Reduction of Money, and ts and Measures. The treatment illustrates the explained in the book *Method in Arithmetic,* The School World, vol. vii., p. 237; the e stated in a concrete way that may be expected to the beginner, and are not too hard. The in from 36 to 48 pages each, and the price of e first three parts is 2*d.* (paper covers), 3*d.* fourth part costing 3*d.* (paper covers), 4*d.*

's "Thorough" Arithmetics (Scheme B). nd III. By W. Woodburn. 36 pp. and 40 pp.) Paper covers, 2*d.* each.—Book II. contains Rules to 999 and Money Rules to £10; he Simple Rules to 99,999 and Money Rules to printing is good, and the exercises seem to be ded.

wing books on arithmetic have been received; s of some of the earlier parts in each series already given in The School World, and we mply note the new parts that have come to *ckie's New Concentric Arithmetics,* Book III. *kie's Model Arithmetics,* Three-term Scheme V. (3*d.*); *Clive's Arithmetics* for Scheme B, .–VII., one book for each standard (a reprint rimary Arithmetic" already noticed, the only apparently being in the numbering of the ercises, and pages); *Chambers's Thorough* Books VI. and VII.; also Teachers' Books th the "Thorough Arithmetics," Nos. IV.

Science and Technology.

An Introduction to Astronomy. By Prof. F. R. Moulton. xviii.+557 pp. (Macmillan.) 5*s.* net.—Much more attention is given to astronomy in the colleges of the United States than is devoted to it here, and this accounts for the fact that the best text-books on the subject are being produced on the other side of the Atlantic. In general character, Prof. Moulton's book resembles Young's "Manual of Astronomy." It contains a clear and accurate account of the present position of astronomical science, and should appeal to students who do not wish merely to be entertained or amazed with diffuse descriptions of wonders and marvels of the heavens, but prefer to digest precise statements of principles, methods, and results. Questions and experiments are given at the ends of many of the sections of the book, and these will be of assistance in enabling a student to obtain a grip of the subject. There are numerous illustrations, including reproductions of many photographs of celestial objects and phenomena; but we miss the name of the late Dr. Isaac Roberts, who was the pioneer of long-exposure astronomical photography. In stating the work of practical astronomy, Prof. Moulton omits mention of spectroscopic observations, but it is scarcely too much to say that they form the most important part of modern investigation. It is only fair to state, however, that astrophysical inquiries and results are surveyed, though the treatment cannot be considered altogether adequate from the point of view of the contributions made to this branch of astronomy by British spectroscopists.

New Optical Demonstration Apparatus.—Messrs. Gallenkamp and Co. have been appointed agents for the supply of Prof. Hartl's optical disc, which is well worth the careful attention of those interested in the teaching of optics. The apparatus consists of a rotating graduated circular disc mounted vertically on a firm stand. The disc is white, and shaded by a semi-circular screen, hence experiments in which the actual path described by rays of light are clearly seen may be easily performed in an ordinary class-room. The source of light may be an ordinary lantern or the sun itself. The rays fall on slits, arranged at will, and travel parallel to the disc to various blocks of glass, troughs of liquid, and curved or plane mirrors, which are held to the surface of the disc by milled-headed screws. The paths described by separate "rays" are most clearly seen, and angular measurements can easily be made. In a pamphlet issued by Messrs. Gallenkamp a long illustrated list of experiments is given. We may mention the formation of foci and images by means of mirrors and lenses, including caustic curves; similar results produced by the combination of lens and mirror; total reflexion in a prism or in various bent rods of glass; the splitting of a bundle of parallel rays falling on the refracting edge of a prism; refraction by liquids in a semi-circular trough; and the formation of the rainbow, in which experiment the rain-drop is represented by a thick circular plate of glass. The number of "rays" traced may be varied from one to seven, and either may be coloured by covering its special slit with a slip of glass, or blocked out by a strip of metal. Ten lenses and mirrors are provided for these experiments, and, with the disc, cost £5 2s. 6d. Three semi-circular troughs with additional graduated disc and screw fittings cost £1 4s. Apparatus to show total reflexion in solid glass rods is priced £1 4s. 6d. To produce diverging rays from one of the slits, a vertical glass plate in which a series of

parallel horizontal grooves are formed has been designed by Prof. Hartl, and costs £1 11s. A most interesting attachment consists of a polarising mirror and bundle of plates and small screen which enable a large class to view simultaneously the phenomena associated with the polarisation of light by reflexion and refraction, and colours produced by larger crystalline substances or unannealed glass. By the addition of a lens, the various interference figures which are produced by small crystalline plates may be seen at a short distance from the apparatus. The polarising attachment costs £3 10s. The whole apparatus should be valuable for several reasons: (1) because each arrangement is very quickly produced; (2) the effects are strongly visible; (3) measurements are readily made; (4) the number of separate parts is small considering the variety of experiments which they render possible.

Systematic Inorganic Chemistry from the Standpoint of the Periodic Law. By Drs. R. M. Craven and G. D. Lander. xvi.+374 pp. (Blackie.) 6s. net.—So much is being written for the elementary student of chemistry that we welcome, for a change, a contribution on the more advanced side of the subject. The authors base their work on the systematic classification afforded by the Periodic law, the elements being dealt with under their respective groups more from the point of view of the Periodic System than with the idea of giving an account of the chemistry of the element itself and its derivatives. Starting with a few words about the atomic and molecular theories and valency, the Periodic System is introduced—a somewhat fuller account of the historical side of the subject would in our estimation have been of advantage here—and after this the relationship between physical and chemical properties and the law is concisely and clearly dealt with. Although a few words are devoted to the objections to the periodic classification, no attempt is made to introduce or to discuss critically any of the alternative arrangements of the elements in the table, which have been put forward within recent years. The introduction of these might well serve to encourage the critical faculty of the advanced student and enhance his interest in the consideration of the multitude of detail which follows about the elements and their compounds. In dealing with the elements, some of the more advanced portions of the subject are considered in some detail. Thus, ten pages are devoted to the stereochemistry of nitrogen compounds; and the rival conceptions of the representation of the valencies of pentavalent nitrogen put forward by van 't Hoff, Hantsch and Werner, Willgerodt, and by Bischoff are stated. This chapter is somewhat involved, even for the advanced student, and there is an absence of criticism. A somewhat fuller account of Pope's fundamental resolution of an ammonium salt into two optically active components would have been an advantage. The complex cyanides and amines also receive a section to themselves, in which Werner's work receives ample recognition. The chapter on the newly discovered elements of the helium group is very meagre and might have been considerably extended; on the other hand, far too much space is devoted to the speculations as to the origin of the elements and the nature of radio-activity, resting as they do on a very inefficient practical basis. As a whole, the book gives the impression of being too much of a compilation; and it would have been improved if the authors had treated their subject more critically. At the same time, the book contains a vast amount of information in a very condensed form and should be very useful to the honours student, especially as the price makes it more accessible than the larger handbooks.

Avogadro and Dalton. The Standing in Chem their Hypotheses. By Dr. A. N. Meldrum, with by Prof. F. R. Japp, F.R.S. 113 pp. (James This is an essay dealing with the question wh discussing the constitution of matter, the aton molecule should be considered first. It is divided sections, dealing with the standing in chem Avogadro's hypothesis and Dalton's Atomic Th an axiom, it is assumed in the preface that th essential difference between what are known on hand as laws and on the other hand as hypoth the outset Gay Lussac's celebrated "Memoir on bination of Gaseous Substances with each Oth in 1809, is discussed, and a distinction is drawn Gay Lussac's enunciation of the law and A enunciation of a hypothesis in explanation of th 1811. Following this, the author enters on the between the hypothesis and the kinetic theory of g adversely criticises Divers's British Association (1902). After chapters dealing with the molecule atom, the position is ultimately taken that A hypothesis may not "be regarded as a well-e truth," but remains a hypothesis—the term law misnomer—and, that being almost universally ac chemists, it has so many fruitful issues that "very basis and corner stone" of chemistry. Th traces as issues of the hypothesis the molecula including the modern theory of solution, the ato thesis, the doctrine of valency, and the Periodic In the second part the author disputes Divers's ve the theory of chemistry, with all its modern deve is indisputably the Atomic Theory of Dalton a out, at the outset, that it is difficult to find out theory really is. This part of the essay is the voted to ascertaining as exactly as possible wh essence of Dalton's theory, considering the histo chief systems of chemistry and finding out h of Dalton's teaching is still in vogue. Dr. Melc cludes that Dalton's service to chemical theory i reviewing the Atomic Theory, he gave an immens to accurate thinking in terms of atoms and mole plaining chemical and physical phenomena in atoms. In particular, we owe to Dalton the la servation of matter. Dr. Meldrum's essay i interest; its perusal will well repay the student of history.

CORRESPONDENCE.

The Editors do not hold themselves responsibl opinions expressed in letters which appear columns. As a rule, a letter criticising any review printed in* THE SCHOOL WORLD *will be to the contributor before publication, so that th and reply may appear together.

Is School Science Worth Having?

As a science teacher with twenty years' exper university and in secondary schools, may I be a express an opinion on this question, though I aware that, as an author of a practical text-bo to be considered by some as having done my ruining the science teaching of England, and thereby contributed to the eventual subjugatio wheat-eating race?

That there is a place for science in every sch culum can hardly be doubted when we consider opportunities it offers for studying cause and effec

value of the knowledge when gained; the two stions are, I think, (1) how far are we to sacrifice isition of this knowledge to the mental training in the process of gaining it? and (2) to what the pupil to be allowed to make use of the results , especially in his practical work? I am, and ays been, an advocate of a common-sense method ng science, of arriving at results heuretically and tep, but I maintain that it is the "heuretic-gone-stem that is ruining the science teaching of the young teachers being led to imagine that they ted to get the reasoning power of a Cavendish e brain of the average British schoolboy, whereas er must realise that it is absolute nonsense to t a boy is never to be told anything, but that g is to be "deduced."

n the green leaf in the sunlight, so with the brain y, two opposite processes go on; it cannot be all ," there must be some "Aufnahme": a boy's power must be developed, granted, but only that eventually "take in" more; and here the ultra-fail—they get nothing in, and fancy only that anything out of, the pupil that can at all com-for the tremendous length of time taken up and most part wasted in the process; and it must not ten that four hours a week, or about 150 hours hool year, is as much as we can generally devote e.

always believed in the power of the lecture-room d hand-in-hand with the laboratory. Nearly four o, in the preface to my "monstrum informe I wrote:—"As a rule complete researches are e for boys; to solve completely a chemical treating the subject historically and thoroughly, too much time . . . the combined faculties of the skilfully directed, will soon solve the problem." ld that a boy, or even a pair of boys, should not to conduct a complete research, but that different nts or inquiries bearing on a set research should ed to various pairs of boys, the importance of the n depending on their individual capacities, and last few minutes of the laboratory lesson should d to a general consideration of the results obtained hole class, this being continued in the following l lesson, the master performing additional experi-hich the brighter children will suggest, and others hough they did not occur to any of the class, are for the completion of the research, or for the t that stage of the research which the master ded on as the goal of the week's work. In this n boy will feel that he has had a share in the d his interest will be awakened and sustained.

ng to the letters in last month's number, I am am not with Mr. Dunstan when he says that he urise with four, but not with forty, as I think r the class the greater the chance of getting g out of it. I consider Mr. Robson's final quota-liarly appropriate, but I think he may well let n in the street" "go hang," as well as those modern Jehus, hurl abuse at us from high places to our protests against what we consider their nreasonableness." If instead of being "slanged" pling) we were met half-way, I feel sure that a t could be arrived at.

headmaster I am convinced that a good teacher lop the reasoning faculties of a child in any sub-the very usefulness of scientific knowledge is, to my mind, an argument against permitting it to be sneered out of the school curriculum in favour of the revival of Euclid cloaked in chemical garb or of a low form of chemical chess.[1] Moreover, examinations in science are not yet abolished. The teacher may feel proud of his success in making the pupil arrive at this or that result, but though this may be a feat in the eyes of the theoretical educationist, chemistry is surely far too important a subject to be sacrificed on the altar of personal vanity.

"What comes to perfection perishes." As soon as a sensible system is adopted someone is sure to arise and overdo it; it is the same everywhere and with everything. We have had "squared-paper-on-the-brain," "reform-method-gone-mad" (even ping-pong committed *felo de se*), "too much science" (English may follow), and now we have lived to see a sensible heuretic method of teaching science (adopted for years by good teachers who have not changed, nor will they change, their methods in consequence of this outburst) being done to death in defiance of common sense and experience. May it arise in soberness from its ashes!

WALTER HARRIS.

Longton, Staffs.

STARTLING as Prof. Armstrong's condemnation of the subject must have been to those engaged in teaching science in schools, it has not missed its aim if it has forced some of the profession to examine the grounds of their faith.

It is generally admitted nowadays that Huxley was right in asserting that the main object of science teaching is to fit ordinary individuals for contact with the material universe which surrounds them. This can be accomplished by a combination of two methods: by training children to observe accurately and to think logically and without prejudice, and secondly, by giving them a clear knowledge of the laws of the universe.

Students who proceed to the university or technical college can afford to neglect the second of these two aims during their school career. It is of primary importance that they should have had a sound training in scientific method. It is with this class, be it remembered, that Prof. Armstrong has to deal; it is on a knowledge of them that his conclusions are mainly based. With regard to this class there is perhaps ground for his indictment.

But the generality of children who pass through our secondary schools do not proceed to college or university. Their education is ended when they leave school at the age of sixteen or seventeen. Are they to spend their science periods, too short already, entirely in the slow, plodding research which Prof. Armstrong recommends, learning no facts save those they acquire from their own practical work, suggesting their own methods, and receiving only a limited amount of guidance from their teachers? The knowledge of natural law thus gained may be peculiarly the possession of the child, but the ground covered in a year's work will be painfully small. Is it right that the majority of children should begin life knowing only the few facts they can gather as the result of their own research, with popular prejudices firmly fixed in most subjects, left to make their way through the world without benefit from the accumulated knowledge of past generations? It is asserted that the student trained to think clearly will easily in after life gain the scientific knowledge he needs, but experience shows how seldom it is that men and women after leaving school have the time,

[1] I hope I shall not be taken as speaking in any way slightingly of chess; on the contrary, I look forward to the time when a weekly lesson in the game will be a regular part of every school curriculum.

even if they have energy and steady resolution, to master a subject the foundations of which have not been laid earlier in life.

Nevertheless, small as is the store of facts appropriated by the research system, it is of infinitely more value than the knowledge gained by the old method of cram. The process of absorption from a text-book was fatal to the faculties of the student.

But is it not possible to combine these methods—to provide that the student shall acquire much of his fact as the result of carefully guided research, and yet to connect and amplify the knowledge thus gained by means of theoretical lessons and demonstrations, as well as to rivet the facts by examples and problems, practical as well as numerical? If we can believe the evidence afforded by the text-books published, it is on these lines that for twenty years a reform of science teaching in schools has been steadily proceeding. Long dead is the divorce of theoretical from practical work, with its accompaniment of aimless "test-tubing." Dead also is the lecture followed by laboratory work, which was mere imitation of experiments first performed by the master.

It is not denied that present-day methods have their dangers. Teachers of science subjects need perennial reminders that a child must *initiate*—if he is not to become a mere machine for the accurate performance of directions. It is still, even with our reformed methods, much easier to tell a boy what he ought to observe or what conclusions he ought to reach than to make him worry them out for himself. Children of all ages will, if permitted, pester with questions rather than try to find out without help. Mental inertia is the besetment of schoolboys, if not of schoolgirls! But the avoidance of such difficulties depends rather on the patience and resolution of the teacher than on the method he follows. It needs even greater patience to encourage scholars to tackle new problems and themselves suggest methods of overcoming practical difficulties. The suggestions received are often so vague and worthless that it is easy to forget their value as a mental training to the scholar. It is unlikely, however, that many teachers allow their class to proceed to an experiment without first ascertaining whether its object is clearly grasped.

In public schools the older methods linger most persistently in the upper forms, where boys are being prepared for the examinations of the older universities. But here it is evident that the fault lies mainly with the examining bodies, since science masters have more than once appealed for the reform of examinations, such as those for entrance scholarships and for the certificates of the Oxford and Cambridge Joint Board. It is by insisting on the reform of the syllabus of such examinations that the greatest help can be given to science teaching in secondary schools.

G. C. DONINGTON.

The Grammar School, Leeds.

Blackie's Latin Texts.

I AM much obliged for your reviewer's paragraph on *Blackie's Latin Texts* (p. 231). Most of the instances he quotes are misprints, and they shall be corrected; in particular, all examples of *-vu* should have been removed. For the accusative plural *-ēs*: *-īs* the same consistency was not aimed at. The last list contains words on which there may be a difference of opinion; but I have followed the rule that all vowels are long before *gn* and *gm* (hence *cōgnōscere*, *māgnus*, *tēgmen*). *Cĕdo* naturally makes *cēssī*, *cēssō* (and there is also direct evidence in the transliteration ἀντεκήνσωραν, see Marx, p. 22); *iŭssī* has the apex on *ĭ* in certain inscriptions, and is also spelt *iousi*; *mīltō* als the apex on *l*; *mīsceō* has *ī* because of the lost *g* (i and there is additional evidence in Romance fo *mīstus* (*nōx* and *ūlterius* are misprints).

The general rules for these things are found i grammars, so that I did not think it necessar them; but it will be quite easy to do so. The Association, however, has a booklet on the spelling and quantity which ought to appear soo

Cambridge. W. H. D.

DR. ROUSE overstates the case when he says t rules for these things are to be found in all good It is because the grammars are not in agreeme is advisable that he should state those he follow example, he had turned to Hale and Buck's gr ferred to in the review, he would have found in the rule that vowels are long before *gn* is not and in § 20 that vowels are short before *ss* exce tracted perfects, because an original *ss*, when p a long vowel, became *s*. Lindsay, on p. 111, unlikely that *cessi* (though from *cĕdo*) and *ius* the spelling *ious-* occurs on old inscriptions) l vowel. Stolz (p. 279) supports *iŭssi*. Lindsay, gives *mīsceo* (as proved by the Romance forms to increase the usefulness of the texts that the was made which Dr. Rouse says it will be qu accept. His letter in the June number of TH WORLD disarms much criticism.

THE R

The Seven Sevens.

THE following original problem may interest so of THE SCHOOL WORLD. The problem, as wi consists of an ordinary long-division sum in w of the figures are replaced by dots. There is on one, solution possible. W. E. H. H

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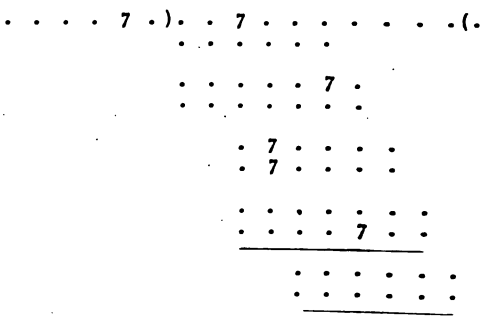

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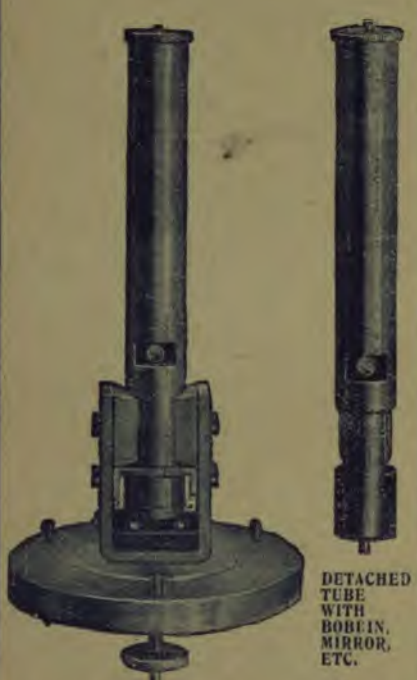

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By A. T. POLLARD, M.A.
eadmaster of the City of London School.

ny experience that, perhaps just because ıcation is such a dull subject, it requires a nful amount of iteration to make people e to the bearings of an educational So said the late Prof. T. H. Green, ny belief that we cannot too frequently to solid earth in educational matters to make true progress. The object of ıcation professedly is to make the best rson taught, whether boy or girl. This hstone by which any educational system ied; it is a platitude, but it is a general that it is the platitudes which most ing home. Just as the schoolmaster devised a neat epigram on a pupil for ıal report finds that he has failed, for invariably sets the parent on the side ıred son, so the person who writes on l matters had better avoid epigram. ıade this apology for dulness, I make for dealing with a few very common- ers.

vas a time, and it is not yet entirely ı a school was judged by the successes ever boys; personally, I have welcomed ses of such boys, but it cannot be too lly stated that they may prove little or to the efficiency of a school at large; even prove just the opposite: they may cation that a school is organised with such successes, that what is taught in and lower parts of the school is just ı is best adapted to selecting out the have the qualities by which successes equently be gained. Until the public ther more that the clever boy is himself factor in his own success, a true ap- of schools will not be possible, and not be the requisite stimulus to schools great duty—to make the best of each their pupils, I do not mean by greater but by suitable methods and curricula. re signs of grace in plenty; we have al schoolmaster seeking new methods e of getting his boys to understand the spirit of the authors that they read, though it is questionable whether the spirit may not often be beyond them; we have the modern language master inventing rapid methods of acquiring conversation in modern foreign languages, though it may be that they are only applicable to a portion of his pupils. All this is satisfactory, in a sense, but for my part I should like to see questions of method and curricula approached more exclusively and more scientifically from the side of the average pupil.

There are certain facts in education which cannot be ignored; most pupils remain at school for a limited period; they differ in their mental gifts, in different subjects and in the same subject—differ most widely; they are taught, for the most part, under definite conditions as to size of classes and hours of work, and the general capacity for book-learning is not high. A schoolmaster must address himself, in teaching a large class, to a point at least between the middle of a class and two-thirds way down from the top. Most boys throw books aside on leaving school. These things being so, it becomes a very necessary problem to ascertain what methods of teaching should be adopted, and in how many subjects a class of boys, mostly average boys, can be profitably carried along together with a view to the best total result. It seems to me that, without impeaching the zeal of most painstaking masters, the method adopted may be one which, in the circumstances, is not adapted to the mass of the boys, and that the curriculum may contain a wider variety of subjects than can be made educationally profitable to large classes. Psychology examines the conditions under which the mind works, and we are learning to apply its conclusions to teaching; the limitations under which schools are conducted require equal attention in educational discussions.

The true way to approach a readjustment of our methods and of our curricula cannot but be to start from the conditions under which teaching is given. Methods and curricula laid down originally for special boys or by clever men for ordinary boys are responsible for much educational failure. It is notorious that a very clever man often fails as a schoolmaster because he has no sense of proportion in teaching, and cannot

get down to the level of his pupils, and it is equally true that an educational system may fail because it takes inadequate account of the boy or girl conditions with which it deals. The sure way, in the practice of teaching, is not to fix attention too exclusively on the ideal, which the clever boy may attain, or to think that nothing is accomplished unless all is accomplished; but to see that what we teach is all to the good—in other words, that nothing which we teach requires undoing or doing over again; we may then teach with a sanguine optimism as regards the ideal, not being discouraged ourselves, and not discouraging our pupils if it is not attained. But before we can arrive at this happy temper we must examine our methods from the point of view of what is attainable by the mass of boys at each stage, and we must be sure that we are not sacrificing quality to quantity by a too extended curriculum in the middle and lower parts of a school.

Perhaps the question of a too full curriculum is the most pressing at the present time; it is a matter down for consideration by the Educational Section of the British Association at its forthcoming meeting. The educational value of this or that subject has been interminably discussed; methods of teaching are being forced on everybody's attention; the one question which has scarcely been dealt with is that of lightening the curriculum. The division of schools into sides has arisen out of the obvious impossibility of teaching all subjects to one set of boys, but the curriculum, nevertheless, still wants lightening, and the speakers at the British Association could not do a better service to schools than by pointing the way, and lending support, to modifications in this direction. At present all the pressure is in the direction of more subjects and fuller treatment of each. The educational training of the country depends on the proper balance of subjects as well as on methods of teaching: the curriculum may be so crowded that, through limitation of time, good methods do not find reasonable scope, and the teaching in a subject fails to bring out the best in the pupil. It may be a delusion of increasing years, but I often think that we learnt more in the past because we learnt less.

Properties of Matter. By C. J. L. Wagstaff. 251 pp. (Clive.) 3*s.* 6*d.*—This volume is excellent, and both students and teachers will find it useful. The author has endeavoured to treat those branches of physics which are not included usually in books on light, sound, heat, or electricity; and, although the use of advanced mathematics has been carefully avoided, the treatment is satisfactory. The text is divided into fifteen chapters, on units and dimensions, lengths and areas, matter and mass, volume and density, energy, circular motion, the pendulum and simple harmonic motion, time, solids, gravity, gases, hydrostatics, liquids, friction, and capillarity. The book is suitable for the use of senior students in secondary and technical schools, and it contains all that is required for a pass degree. It may well serve as an introduction to the more advanced standard text-books.

ARITHMETIC AS A MENTAL EXE

By H. G. WILLIS, M.A.
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ALL questions relating to the te arithmetic depend ultimately reason for which it is generally i every curriculum. Is it a subject like b ing and shorthand, of little education great practical value, or, like the languages and history, of little practic great educational value? Of the arithm in secondary schools only a small part in after life. Everyone should reach t standard, that is, should be able to add u of money, to reckon the cost of variou dities, 13¾ yards of cloth at 2*s.* 11½*d.* railway tickets at 5*s.* 4½*d.* each, to dec count, to find a batting average, and statistics as percentages. Except in spe does the ordinary man or woman in the life require more advanced knowledge?

Educationists exhort us to make our practical. Beyond bill arithmetic all ot lations in business are effected by ready tabulated results, and the slide rule. pupils have achieved the bill, are they to in the use of these mechanical subst thinking? Is this the education of t tionists?

Does the practical man take a house at rent, finding to a penny the amount at interest saved in ten years, on condition his own beautifying; and then find the yards of paper for his drawing-room, ca ducting for door and windows? Will h town between 8 a.m. and 9 a.m. when of his clock are at right angles? Will h at 1*s.* 10*d.* and 1*s.* 3*d.* a lb. so that he 7½ per cent. by selling the mixture at 1*s.* Will he calculate how much stock he m fer from one investment to another in increase his income by £15? We ma sure that he will not make his calculatic to him unpractical way, but will deal wit a more businesslike way. The epithet can hardly be applied to such arithmet tions as these. All practical arithmetic be included in the bill standard.

Arithmetic would be made one of the of the primary school from the utilitaria the bill, even if it had no other educatio But why in the secondary school is more arithmetic considered so important? I that it is generally confused with and part of the bill arithmetic, and conseq reputation depends on a somewhat mista or, if its high estimation is justifiable, t can be only what is implied in the title our earliest English arithmetics, that th it tends to sharpen the wits. If the arithmetic affords good mental exercise a tion, so also must the bill arithmetic. is there so great a tendency to teach b by rote and rule? That surely deprive

early all its wondrous power of stimulat-
ental faculties. Teachers (?) who follow
od may give their customers a full pint,
ntains far more water than milk.

provide the schoolboy with most admir-
oned out proofs and processes; but when
sum to work, he finds in the book what he
be a similar one, and then, without
to the reasons for the process, works his
xactly the same way. Is not this con-
one, sometimes even in other branches of
tics, at all stages of the school career?
nothing apparently that a child finds so
as to follow a train of mathematical
. The child can of course be forced to
ough the logical explanation, and may
ome cases be got to reproduce it satis-
but stuffing the child with this rich food
bring on an attack of mental indigestion.
rich food be served out a little at a time
with plenty of plain fare, and your child
up mentally healthy and vigorous.

vent unintelligent imitation of worked
it will be found best to supply children
ok containing questions only, no hints as
ls being given in the book. The methods
nations should be got from the pupils
s by plenty of *viva voce* questions care-
ed to their capacity and by a series of
graduated from very simple cases, well
eir experience, to cases just as hard as
nanage. As the pace of a cavalry charge
the slowest horse, so the bottom child
ass regulates the rate of progress. A
merits are often judged from the pro-
his best pupils, who probably need very
hing, but get on almost without help.
test lies in the progress of the tail of the
shorter the tail, the better the teacher.
m children should be plied with numerous
, with occasional questions to the others
ep them awake; the subject must not be
even the slowest have done something.
pening of the wits comes far more from
tion and answer drilling than from the
t written work. In *viva voce* work
ry to written work, it is better to err
de of too little explanation; every case
t be explained, some difficulties should be
upils to think out individually. At first,
to make them think, the rule should be
and examples set which can be easily
ut. As soon as they have got the rule,
t ceases. If they are asked for a reason
ity will quote the rule.

as it is found that the children are work-
rule, either of their own making or
ewhere, the teacher can no longer with-
e; all he can do is to see that the rule is
nd that the reasons for it are thoroughly
d.

ll possible mental training has been got
branch of arithmetic, the rule or formula
given in order to save useless labour in
—that is, the rule or formula should be kept back for the last revision. Those teachers who have an inspector to dodge or an examination to cram for will no doubt find that rules and formulæ form the easiest and speediest road to their immediate goal; but at the end of the school career the rule and formula crowd will be found far behind those who have been taught to rely more on their thinking power.

By way of illustration the addition of fractions may be taken, in which there is a fair amount of difficulty, and in which, if the whole principle is to be understood completely, a fair amount of illustration is required. The bare rule could perhaps be mastered by seeing a couple of examples worked on the blackboard. The rule would enable the class to "satisfy the examiner" and show a "competent knowledge" of the subject. By teaching (?) the bare rule half the time would be saved (!) and the class would make more progress (!). Working examples without a thorough understanding of the principles no doubt gives the class some mental exercise and promotes facility in arithmetical operations, and allows them to pass on sooner to other branches of the subject. Nearly all the mental discipline is thus lost, and the knowledge gained is of little practical value.

There are very few teachers who would not give some sort of explanation or formal proof of the rule. If a child can get hold of a rule, he is generally quite content and wants nothing more. But a long-sustained mathematical argument is most repugnant to his mind, and he will give the explanation or proof as little attention as the teacher will allow. By a series of questions such as follow, and then similar examples worked by himself without aid, the average child could probably be got to understand the process.

(i.) What is $\frac{1}{4}$ of a penny? How many quarters of a penny are there in $\frac{3}{4}$ of a penny and $\frac{1}{2}$ of a penny? in $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ of a penny? What is the 12th of a foot called? How many 12ths are there in $\frac{1}{3}$ and $\frac{1}{4}$ of a foot? in $\frac{1}{6}$, $\frac{1}{6}$ and $\frac{1}{4}$ of a foot? How many 10ths of a cm. in $\frac{1}{2}$ and $\frac{3}{5}$ of a cm.? Add together $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{5}$ of a pound (money), giving the answer as a fraction of £1. Add together $\frac{1}{2}$, $\frac{3}{5}$, $\frac{1}{4}$, $\frac{9}{10}$ of £1.

(ii.) Add together $\frac{3}{4}$ and $\frac{1}{4}$ of an apple, explaining how it is done. $\frac{3}{4}$ and $\frac{1}{2}$; $\frac{3}{5}$ and $\frac{1}{2}$; $\frac{7}{10}$, $\frac{1}{4}$, and $\frac{3}{5}$.

(iii.) What is done to 3rds and 4ths in order to add them? to 6ths and halves? to 5ths and halves? to 10ths, 4ths, and 5ths?

(iv.) Add 2 ft. 3 in. to 5 ft. 7 in.; add $2\frac{1}{4}$ to $5\frac{7}{10}$; add $3\frac{5}{6}$ and $7\frac{1}{4}$. Add £3 4*s.* to £5 15*s.*; add $3\frac{1}{8}$ to $5\frac{3}{4}$; add $7\frac{7}{10}$ and $\frac{3}{4}$; add 15 m. 25 cm., 37 m. 20 cm., 19 m. 87 cm.; add $15\frac{1}{4}$, $37\frac{1}{6}$, $19\frac{87}{100}$; add $\frac{1}{6}$, $15\frac{1}{2}\frac{1}{4}$, $27\frac{1}{4}$, $81\frac{1}{10}\frac{1}{0}$.

Some of these questions may be written on the blackboard, and the working written at the dictation of the child. The class must be shown the tidy method of working before they begin their written work.

The children will very soon find the L.C.M. rule for the common denominator, and then the teacher must make the class see the reason.

What other fractions is $\frac{2}{3}$ equal to? How can all these denominators be described? What fractions is $\frac{1}{4}$ equal to? What are these denominators? What denominators can be used

for both fractions? What are these denominators? Which is the best to use in adding these fractions? Why? Repeat these questions with $\frac{3}{5}$ and $\frac{3}{4}$, &c.

Graphic methods of adding fractions are often very useful. To add $\frac{2}{5}$ and $\frac{3}{4}$, draw on the blackboard two equal oblongs, and ask the class to get $\frac{2}{5}$ of one and $\frac{3}{4}$ of the other. The result will be clearer if one is divided by vertical and the other by horizontal straight lines. After some questioning it will be seen that these fifths and quarters must be divided into smaller parts all of the same size and shape. This is done by horizontal lines in the first and vertical lines in the second figure. Time would be well spent if a preliminary lesson were devoted to this graphic method, the class, after being sufficiently questioned, solving easy questions by constructing their own figures. They may be told to use different figures—lines, oblongs, circles—in the different questions.

More advanced pupils should be made to give, sometimes orally, sometimes in writing, the full logical proof of every rule and method. This is a part of the subject omitted from most examination papers, and therefore omitted by teachers. But it affords practice in continuous reasoning quite as good as that found in geometry.

Most excellent practice in mental arithmetic is to be obtained from miscellaneous examples which do not fall directly under any rule. The easy questions may be worked out completely, those involving long calculations should have the method of solution sketched out to the end. This will get the class into the way of writing down the complete result before the various calculations are begun. More use can then be made of cancelling and approximating. Different methods should be asked for; the class should point out the merits and demerits of the various suggestions. A revision of the more important results at the next lesson will be very useful, and may be utilised against the inattentive.

After fifteen or twenty minutes of oral work the pupils may be set to work out on paper somewhat similar questions; each child will thus have to repeat the reasoning unaided and under slightly different conditions. The mental practice in rapidly solving a problem must produce more rapid and accurate thinking in the written solution, so that the time apparently wasted in *viva voce* drill will very soon be found a good investment even as regards written work only.

There are probably very few teachers who rely solely on rule of thumb methods, without any explanations or questions to the class, and on the other hand very few who do sufficient in the way of mental arithmetic. What is needed for the improvement of the teaching of arithmetic is not any great change in method, but a large increase in the amount of oral work. Nothing is needed which lies beyond the powers of an ordinary teacher willing to devote some thought beforehand to each lesson.

As long as a teacher's work is tested by the written solution of a few questions of common types, falling under well-known rules, can he in reason be expected to teach anything b rules? Many an assistant-master knows teaching is not so good as it might be, ar too how he could make it better, but sees change that he would like to make will in the next examination of his class. Tl ing of arithmetic is left almost entirely in t of assistant-masters.

As headmasters have probably taught v arithmetic in their past career and teac present, as inspectors are in a worse cas often had but little experience in teachi metic, and having none at present, it foll assistant-masters are the only perso sufficient experience and knowledge of thi to give an opinion of any value.

But the voice of the assistant-master, a little louder now than of yore, is not attract much attention. Assistant-maste their own initiative, so far as present c allow, do a great deal to improve the te arithmetic, and indirectly through th masters they may effect still greater impro A constant striving after the ideal cann produce great results.

OBJECT-LESSONS.

I.

By O. H. LATTER, M.A.
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IT will probably be granted that objec form the most convenient and rat troduction to the more systematic natural science. In saying this I mus understood to be recommending a cours lessons as absolutely necessary for th comparatively late in school life turn tention to natural phenomena, though e would probably derive considerable ben passing, be it but rapidly, over the ro should have become familiar to them years. The type of lesson which we sidering has for its main purposes the of the powers of observation, the openi eye and heart to the things of Nature, th of a spirit of inquiry, and of self-relianc conquest over small things. It matte much that every child should be give tion as that every child should be given to learn, and become convinced that he much by the use of his own unaided se that in so doing he is adding to his own and to his powers of usefulness to his fe to his fitness for citizenship.

Biologists have for many years recog there is truth in the recapitulation the with modifications and condensatio organism in the course of its individua ment repeats with some degree of acc stages through which its ancestors ha in the slow struggle of evolution. Th is equally sound whether the developme

r of mind. The sanction of Nature, and ss proved through untold ages, are suffi- rant to justify its adoption. But this mean that we are to insist that every hall laboriously toil step by step along h of the path trodden by the feet of o have gone before, and who have left tage to posterity the accounts of their ons and experiments. If this were so short span of human life would barely, suffice for any one of us to reach the becoming up-to-date, and then where gress? True, we must recapitulate, but not forget that Nature herself condenses, es, even entirely omits certain phases, eeds, *per saltum*, to hasten on to the at marks the highest perfection yet Thence is the starting-point for future ent. Similarly in education, the un- ses of an unusually clever child might ly and eventually enable him to find out rhaps all were he a genius, of what is n some one topic before he reached the e years and ten. But is he to be denied all ntages that come to us in the twentieth rom the labours of those who have pre- and placed us in respect of knowledge w we stand? No; he is entitled, *in er place*, to make use of the short cuts by the work of others. And what is the ace at which book-learning may be in- ? At the risk of pressing the analogy I will turn again to the phenomena of evelopment. Of every individual animal ing-point is the same—the unicellular d each takes the few first steps in develop- ng the same well-worn road of seg- ; thereafter come variety and diver- ccomplished by leaps and bounds over at represent vast intervals of time and ggles for existence. The beginning is in all; the beginning recapitulates, *in* what we believe to have been the course ion; for a later period are reserved cur- compression, and omission. The sure foundation must first be laid, and then gs may be more free.

now consider how all this applies to nt subject. What has been the course volution of the knowledge and intellect n the past, and what, therefore, should nes on which the plastic mind should st be guided in the present? Conscious ligent appreciation of external objects, ith something more than the eye alone must have been some of the first steps l progress, and followed by reflection, on, consideration of cause and effect, eory, and crude experiment. Later ns eventually enjoyed the benefit of oral and of written works. In fact, we might e the history of the growth of know- inverting the familiar "Read, mark, d inwardly digest" into "Mark, learn, digest, read." Now object-lessons are only suitable to the earlier of these stages, and I wish to emphasise this opinion, because I believe there is a very decided tendency, in our zeal for nature-study and heuristic methods in general, to carry this "marking" stage on too far and too exclusively in the course of study. We are inclined to keep pupils too late in life at methods which are obviously initial and, while eminently suitable for children between the ages of nine and fourteen, by no means the best for the *exclusive* occupation of elder pupils. By the time a pupil has reached sixteen or seventeen years he is fit for, and needs, stronger food; he requires something at which he can "chew"; he is ready not only to learn his own discoveries, but also inwardly to digest and to assimilate the more advanced material that he can obtain by reading. If once the preliminary stages have been well driven home, if he has learnt how and what to observe, how to teach himself, the habit will have become ingrained. He will be able intelligently to read what others have done, to criticise methods and results, to weigh evidence, to harbour the honest doubt that comes of faith in his own power to test the work of others, and to go on further in the search for truth.

I hold, then, that the purpose of object-lessons is not to impart information, but to train the faculty of observation—to teach the child how and what to see, how to reason on the facts obtained, and thus from the study of a few simple natural objects to arrive at a knowledge of some of the simpler scientific truths. Granted this much, in what form and shape should the lesson be given? Many teachers, being compelled by force of circumstances to teach large classes, and having before them the prospect of examination and inspection, yield to the temptation to produce immediate results as evidenced by knowledge obtained. Instead of making the members of their classes find out facts and relations each for himself, many proceed to tell the class the very things which should be held back until the children have themselves made the discoveries. That is to say, in the hands of such teachers the object-lesson becomes a lecture, illustrated, perhaps, by specimens, but still a lecture, and not a piece of individual research on the part of each pupil. This latter it must be if it is to attain its goal.

Let me illustrate my meaning by instancing an imaginary object-lesson dealing with climbing plants. Now the lecturing teacher will probably discourse in some such terms as these:—"You will notice that all these climbing plants before you, the ivy, clematis, nasturtium, pea, scarlet runner, convolvulus, white bryony, Virginian creeper, hop, honeysuckle, and bramble, have stems and branches that are comparatively weak, or at any rate not sufficiently strong to enable the plant to hold itself erect without assistance. Now if you look at plants, whether trees, shrubs, or herbs, that do not climb you will notice that they have strong stems, or else form rosettes of leaves upon the ground. Those with stiff stems and branches are able to hold out their leaves

so as to get them well exposed to the sunlight and air. Those that form rosettes push aside and kill the plants in their immediate neighbourhood, and so prevent themselves from being overshadowed. No doubt you have often observed that plants grown in a poor light present a sickly and unhealthy appearance; their leaves are yellowish instead of green, and the entire plants are 'drawn' and leggy. Also, if you have grown geraniums and other plants in your windows you will have noticed how they always turn the upper faces of their leaves towards the light. We may obviously, then, conclude that it is very important for the health and well-being of a green plant that its leaves should be well exposed to the sunlight. Thus you will perceive a reason for these weak-stemmed plants laying hold upon some firm support, viz., in order that they may lift their light-loving leaves into well-illuminated positions, just as do other green plants.

"But if you examine these specimens that are before you, you will notice that the method and means of climbing adopted are almost as numerous as the selected plants themselves. The ivy attaches itself to walls and trees by means of roots, which spring from the shaded side of its branches. These, like ordinary roots, turn away from the light, and are devoid of green colouring matter. The scarlet runner, convolvulus, hop, and honeysuckle, on the other hand, twine their whole stem round and round their support in an ascending spiral. But even these four are not quite alike, for while the scarlet runner and convolvulus describe spirals that continually turn to the left hand, the hop and honeysuckle turn to the right. It is thus clear that, whatever it is that causes the growing-point of the stem of these plants to move round in a circular fashion, the movement cannot be solely due to the sunlight. For, if so, all alike would turn in the same direction, viz., to the right hand, as they followed the sun from east to south, and thence to west and north. Yet another method is to be seen in the nasturtium, clematis, and pea, inasmuch as these grasp their support by means of their leaves; but while the two former use the stalk of the leaf for this purpose, the pea has converted some of the leaflets of its compound leaves into tendrils that quickly wrap themselves around any object with which they come in contact."

By the same method our imaginary teacher will proceed to discuss the somewhat difficult homologies of the tendrils of the white bryony, and the more certain of the Virginian creeper and other vines, carefully pointing out the mechanical purpose of each, and the irritable nature of the tendril prior to attachment. In fact he will work hard to secure that his class shall have a thorough understanding and fairly complete knowledge of the subject, so far as he is able to give it. Now if this method of teaching is perhaps permissible in some instances, it is assuredly not so with the class of pupils for whom object-lessons are intended. The lesson just sketched might interest the whole class, and convey to each ideas, perhaps even cause a few of zealous to look at climbing plants and their proceedings for themselves; but the one essential of an object-lesson. an exercise in concentrating the atte in use of the memory, but it trains no use of his own eyes, it makes no one own wits in arriving at conclusions from the facts and relations observed. out the pupils are conscious of being and taught by the efforts of anothe statements are received with loyal ac and without question or original th conducting an object-lesson the teacher much as possible, efface himself, and a of an unseen guide rather than that of In a subsequent article I propose to how this may be done with the same n those to which reference has already b

ON WORD-BUILDING.

By NELLIE DALE,
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IN discussing the subject of word-b will take it for granted that it that the children should have an grasp of the words that they use, that t utter them correctly, musically, and au they should have scope for the exerci imagination and opportunities for the w their mental horizon. In order to pro physical, moral, and mental welfare, w to arrange the work in such a manner them as active a share as possible in it

Before we enter into the details of w ing we must speak of the preliminar that is given to the children; for, to e to build their words intelligently and ently, much care must be devoted to stages of their school work.

We shall first give them opportunitie cising and cultivating the spoken lang must therefore let them talk as nat spontaneously as possible about subj to interest them: it is delightful wh have the talks out-of-doors. The work will supply a wealth of subjects, and t can be encouraged to bring flowers, p and natural objects, such as shells ar providing, when practicable, a specim child in the class. The desire of expre they see will lead to the need of n words, and, as the children have the ob them, it will help them to associate the with the new word. Meanwhile, great be taken in seeing that they breath and articulate clearly and musically.

The children are thus acquiring, by observation, a knowledge of colour, number; they are noticing habits and

th and qualities, such as hardness and
ess. Their talk is followed by their
on their blackboards with coloured
when they try to make their chalks "tell"
the subject under consideration. When
dren have done their share of the work,
e shown a painting or drawing which
her has made of the subject of the talk,
is hung on the wall of their class-room.
s told by the teacher and re-told by the
, poems, and songs will all help in the
at we are considering, and modelling and
will provide further means of expres-
n talks like the above it is interesting to
ne particular points that strike the children,
r drawings also are of deep interest.

the children have gained some power
ession, they pass on to the consideration
sounds of speech (the signs will not be
ntil later). They continue their talks, and
her leads them to the discovery of the
ounds of some of the words used by
The initial sounds of words beginning
s, *l*, and *f* will be readily discovered,
these sounds can be prolonged, and later
dren will take the sounds of *p*, *t*, and *c*.
ne initial sounds they pass on to the dis-
of final sounds, then to middle sounds,
tly to the sounds in the order in which
uttered in a word.

attention is next drawn to the quality
speech-sounds, and they discover that
e breathed (or voiceless), *e.g.* *s* in "sun,"
t others are vibrating (or voiced), *e.g.* *z*
zag." By pressing their hands close to
rs during the utterance of the sound they
s distinction particularly marked. The
ion of their speech-sounds next claims
tention, and they will be able to see or
positions taken by the lips (*e.g.* for the
f *p*) or the tongue (*e.g.* for the sound of
ne various sounds.

ughout the above work the children are
their eyes, ears, and hands; they are
g their vocabulary and gaining a readi-
verbal and pictorial expression, and they
refore be able to pass on to the learning
ch-signs, which they can now handle in-
tly and independently. They gradually
e following speech-signs, *p*, *b*, *t*, *d*, *c*, *k*,
nd *a*, and, in the case of each, the teacher
short story introducing the word, the
ign of which the children are going to
They discover the initial sound (the name
et given), notice its quality and produc-
nd they are then shown the sign, which
ed in blue, black, or red, according to its
er as a voiceless or voiced consonant or
l. They study the form and make sug-
s as to how it should be drawn, illustrating
ggestions by drawing in the air, and then
int the sign on their blackboards with
d chalks, and illustrate the story which
ed the key-word.

choose the locality of each sign in a tabulating frame[1] which has appropriate homes for the various sounds: *e.g.* *p*, *b*, are placed to the left, in the lip-section; *t*, *d*, further to the right, to show the progression from the lips to the gums above the upper teeth; and *c*, *k*, *q*, *g*, still further back, as these sounds are produced at the back of the mouth. The vowel *a* is placed in the section of the frame arranged for vowel sounds. Each sign is also identified by them in the book written for their use.

They have now sufficient material for building a certain number of unseen words. These words are introduced in stories told by the teacher. The children personate the sounds of the particular word (*e.g.* *cab*), and each personator takes the sign representing his sound from its place in the frame and puts it on the building-ledge. The word thus grows up under the hands of the children without having been previously seen by them. They print and illustrate the word and find it in their book, and look for the picture illustrating the story. The word represents what the children can handle independently, and the story introducing the word appeals to the imaginative side of the child.

When they have built most of the words possible with the available signs, they learn the signs for the nasal sounds, the liquids, the continuants, and the remaining short vowel sounds, using each sign, as soon as it has been learnt, for the building of words in the manner described above. They now learn how to *write*, and they will be able to practise printing and writing, and this will accustom them to both aspects of the word.

The signs for the double consonants (*e.g.* *x*, *j*) are taken next, and the children are equipped for the building of words of any length, provided that they contain short vowel sounds only (*e.g.* astonishment, unexpectedly). They will occasionally handle words containing silent consonants (*e.g.* *k*nit, *w*ren), and the silent character is marked by printing the sign in yellow. When facility has been gained in the use of the signs already mastered, the children learn the signs for the long vowel sounds (*e.g.* f*er*n, f*a*ther, N*i*na, tr*u*th). These are arranged in a special order, and the simplest form for the sound is taken first. To avoid confusion the learning of another representation for the sound is postponed for some time, and, therefore, not until the children have learnt the simplest form for all the long vowel sounds, the diphthongs, and triphthongs, will they be introduced to other representations (*e.g.* b*ir*d, st*ar*, tr*ee*, m*oo*n).

A special part of the frame is allotted to these signs, and the manner in which they are produced will enable the children to find a suitable "home" for them; *e.g.* the *a* (father) will be placed lower down than the *i* (Nina), because the tongue is lower for *a* than for *i*.

As in the earlier work, the children use each of these new signs for building words as soon

[1] The frame designed for this purpose and the books are published by Messrs. George Philip and Son, Ltd.

as it is learnt, and in their reading they will meet with many other words containing it. The intelligent attention that they have given to the key-word will enable them to notice these additional words very quickly.

The children also share in making a record-sheet of the signs (*e.g. er*) and key-words (*e.g. fern*), and this is particularly useful for reference when a second form for the sound (the "*bird ir*") is introduced. The practice of taking one difficulty at a time and the procedure in a definite order enable the children to handle and master words of the most irregular character, the very irregularities being a source of great interest to them.

There is scope for endless variety in the lessons, and, as the powers of the children develop, they take an increasingly active part in the conduct of them. A child can be responsible for the handling of a word in the following manner:—He introduces it in a story, chooses various builders from the class, and prints on the teacher's blackboard, whilst the rest of the class print on their own boards. When a number of words containing a particular sound (*e.g. ou* in "trout") have been handled by different children in the above manner, they all identify them in their books, and, in the large groups in their more advanced books, they are asked to name the line and column in which a given word occurs (every *third* line is numbered). They also enjoy introducing in an original story or sentence some hitherto unused words of the group containing the particular sound under consideration, and it is then the work of their schoolfellows to find the word and its position. It is a source of great pleasure to the children if the teacher takes the part of a pupil and finds the words which they introduce in their stories. It is a thrilling experience for the teacher, and he may have to submit to friendly criticism with regard to his varying speed in finding the requisite word: however, it will be valuable in that he will be able to sympathise with them in similar circumstances.

In a later lesson the "party" of words handled by the children in the above manner can be printed and written in their books, and pictures can be made by them to illustrate their stories. Throughout all the stages the children continue their daily nature and other talks, and these enable them to continue the cultivation of their spoken language and to gain an intelligent understanding of the spoken word before they have to build it, and their rooms are adorned with the beautiful plants, pictures, and specimens used for the illustration of their lessons.

The teacher will find it necessary to devote himself to a reverent study of the mother-tongue, which, in its turn, will prove a subject of fascinating interest. The gradual classification of the speech-signs in the frame by the children and their use of them for building words will help the teacher to detect and the children to correct faulty pronunciation (*e.g. f* taken down instead of *th*: in this case we shall proba that the child is saying *f*umb instead of t this work will also lead the children to conscious grasp of the science of langua will enable them to understand cognat (*e.g.* daughter, Tochter; father, Vater), take a keen interest in words derived from sources.

The active part that the children tak promoting their own welfare, will give the opportunities for learning much about th of view and their interests and pursuits, will strengthen the bond of sympathy the teacher and the pupils whom he is h become intelligent, self-reliant, and th men and women. In order to meet their ments he will feel the need of perpetual and the wider his culture the more wil preciate the loving pursuit of knowledg

FOLK-PLAYS AND FOLK-EDUCAT

By FANNY JOHNSON,
Formerly Headmistress of Bolton High Sch

IF every woman is at heart a rak teacher is in embryo an actor. Th link between School and Stage is a a bond as the more open and obvious co between Church and Stage. Half the discontents about education are due to th nition on the one side, and the want o nition, or even flat denial, on the other, part that Ritual—or, in other words, must necessarily play in the matter. sight, the popular ideas of a schoolmaste comedian suggest types of character an of thought as wide asunder as the poles. little further consideration reminds teachers and preachers—for in reality th classes are one—have always naturally t the drama as a vehicle of thought and of instruction. It is only necessary t to the earliest extant plays in our own lit performed by pupils of schools, and wr their instructors. The reason for this is logical; no influence is stronger upon minds, and even upon a certain class o ordinary minds, than the influence of the t

The whole tendency, indeed, of "modern" teaching is based upon just appeal to the senses—*mutatis mutandis* made by the actor on the stage. Doubtles will come a reaction. Children, glutt "pictures" and real "objects," will th perhaps be seeking relief from sensation, to reflection! In the meantime, reaction yet set in. On the contrary, the signs present all for fair "theatre" weather, particular for a revival of the Folk-Play, i so far, every right-minded person must re believe Mr. L. N. Parker, who has brought his Pageant at Warwick to so tri

sion, was once himself a schoolmaster. r that may be, he used the magnificent ity that man and nature afforded him pre- the spirit of the "modern" teacher.

s hard with anyone who has even a of instruction in the literature and his- England not to tend towards sentiment- Shakespeare's county. Residents are s dead to the stimulating influences of ic site, but the inhabitants of Warwick l of enthusiasm. Material of all sorts, ting the generally necessary though not requisite of worldly wealth, was ready Parker's hands. It may be predisposed ion that makes one find these people a y mild and beneficent folk. At any rate, ne can hardly be mistaken in the impres- spirit of genuine enthusiasm for the best hat was shown by the actors as they about the streets, wearing their pageant with an air, not of uneasy vanity or self- sness, but as persons engaged in a busi- important to admit of thoughts of self. t see or hear any of the vulgar sights or hat usually distress a refined sense on a y or Sunday evening in our towns, especi- r a week of any kind of revelling. This surely for a refining influence upon , and let us hope upon morals.

eculiar spiritual influence of the drama, guished from the other arts, though this istic is terribly obscured in the ordinary is its fostering of *esprit de corps*. In this bles that other noblest of arts, architec- is social, not individual. Both for nd audience the presence of numbers is . Certainly the fact that the performers were actually, as well as relatively, s, had something to do with the almost " effect of the Warwick Pageant. It hough the vast crowd on the arena were in some representative function on be- the crowd of watchers—quite, in fact, pirit of ritual proper. And here it is y to utter a note of warning. For we enough, we English, to value mere big- ond its just value. One can fancy, if ageant fever" continues, that Bury St. s will be boasting that she has gathered of thousands where Warwick gathered sands, and so on. I would rather, for , see a simple village play performed by villagers alone, than assist, even by , a performance which was to be ex- as a mere source of gain. In such the spirit is everything. At Warwick st credit all concerned with a zeal that r beyond base considerations of any

ometimes forgotten, even in the House nons, that a school is primarily a place uction. There was a meeting once of interested in education, at which for some usual commonplaces were being uttered. th one arose and said, "I think it would be well if the teachers in schools knew something." The Warwick Pageant was, from the point of view of this speaker, irreproachable. From beginning to end, it was highly instructive. All the Episodes were based upon historical fact, or what is almost as valuable, historical fable. And the facts were not only rigidly adhered to, in a manner that might, if anything, have been termed pedantic, but were woven into a unity such as could only be accomplished by a highly skilled playwright. In three hours the whole history of Warwick was presented lifelike before us. She, the town of Warwick, was the heroine of the piece, and her ecclesiastical and scholastic foundations, her dealings with kings and princes, the munificence of her private citizens, and her contributions to literature were all touched upon with a masterly hand. It was, as we hinted, a magnificent object lesson. No child, and scarcely a grown person among the audience, but must have been kindled to desire more knowledge of the fascinating page of its country and county history. Such an achievement is, in the strictest sense, educational.

The promoters, too, were much concerned with correct archæological detail. They claimed to have reproduced the costumes and customs of each succeeding age with the greatest fidelity. And if, in parts, the massing of persons similarly costumed and the careful blending of colour effects reminded one of the specious attractiveness of a ballet, it must be owned that here again the instructive element was, on the whole, well to the fore. The antiquarian, for instance, could hardly be unmoved by the quaint effect of the lords putting on their tilting helmets, as they uttered the sentence against Piers Gaveston, and thus giving a foretaste of the masked murderers, and black-capped judges that deal in later dooms. Such ceremonies, speaking in a pedagogic sense, arouse interest and curiosity, and thus pave the way for the advancement of learning.

The "modern" schoolmaster professes to be more concerned in the development of faculty than in the "imparting of information." Yet in the old-fashioned schools there were certain faculties, then called accomplishments, that we are apt nowadays to neglect. When Touchstone bade Audrey "bear" her "body more seemly," he gave the hint that is still, I believe, overlooked in elementary schools. Even the high-school girl is apt to be censured by her critics as wanting in the deportment that was one of the graces of a former generation. Appearance on a public stage suggests in itself some care in that respect. And the other physical graces, such as a pleasing voice and intonation, and an easy manner, naturally follow from careful training to enact a part in dignified drama. The dangers inherent in great physical attractiveness are too apparent to need citing. The comfort is that so few of us are beautiful enough to be dangerous. On the other hand, a general development of more perfect physique, such as results from being taught agility in the dance and song of the drama, is

in itself desirable, and, socially speaking, there is the less danger when loveliness, as well as other good gifts, ceases to be the monopoly of the few. The more "useful," so to call them, faculties are also developed in the course of play-acting, where, as in the case of the Warwick Pageant, the costumes and properties are manufactured on the spot, and not bought ready-made. Everyone must have observed a marked difference in the general "handiness" of the community in districts where a craft of any kind flourishes, as opposed, for instance, to those merely devoted to trade. Actors, as a profession, are not, I believe, distinguished in this respect. They are too far removed from the times when it occurred to the inventive genius of Bottom to bring the moon on the stage by means of a lantern and a thornbush. The "devices" of the stage, properly utilised, afford an immense field for such fertile resource, and introduce, by the way, such moral virtues as thrift and tidiness, as well as the æsthetic joy in a stage property well-made. Doubtless an impetus would be given to all manner of minor arts and crafts, if the wholesome custom of home production of properties were followed in each of these folk-plays, of which the fashion seems to be setting in.

At Warwick all classes of the community seem to have worked together for the common good. The better parts were, on the whole, taken by persons of the greater social importance. It is not, and never will be, possible to make all men equal. But

> "Therefore doth heaven divide
> The state of man in divers functions,
> Setting endeavour in continual motion."

The working-class mother rarely has time or strength to enter into the enjoyments and occupations of her child in the way that middle- or upper-class parents could and should. We are fond of saying that education does not cease with the date of leaving school. But, nevertheless, development is for the most part stunted or arrested by lack of opportunity after school age. And the folk-play, combining all ages as well as all classes together, is a splendid chance for parents to acquire a little fresh knowledge themselves, and to appreciate the possibility of learning to live instead of earning a living.

Folk-plays in Germany are of more unbroken tradition than in England, and this secular spectacle is a very different thing from the Passion-Play at Oberammergau or Brixlegg. There, the actors seem bent to "glorify God," as here the leading motive would seem to be first local, and then national, patriotism. The Southern Germans, who take part in the Tyrolese or Bavarian performances, are probably less instructed though perhaps naturally more artistic, than the English proletariat. The hand of the Church is laid heavy upon them for good or evil. On the other hand, the Passion-Play is not an isolated fact. In these *neighbourhoods there* is a semi-professional class of permanent "peasant players," who c perform, during the summer at any rate whose subject is taken from their own life and environment. Such plays tend t tention of the local dialect and costume indigenous dance, and are thus perhaps teresting to the antiquarian than to the e ist. Yet the fact that a man may retu from the plough to the stage, and *vice v* its effect on the social consciousness.

The recognition that art is a necessar life, and yet need not be the whole c perhaps the most valuable consequenc folk-play. The psychology of acting, as arts, is a somewhat mysterious thing. any rate, who have anything of the dra stinct, know that it makes for intense h And happiness is one of the aims of e Mr. F. R. Benson, who has done mo own person to keep alive the flame of en for classical and folk-drama in England one of his contemporaries, seems to h covered in obscure places an immense of unexpected survivals and revivals of art. His own Dramatic Revival Societ is to be on broad lines, inclusive of ever drama worthy of the name, will be fed tiny streams of influence into a broad an river. On every hand there are sig renaissance of English drama. Perh now some mute boy Shakespeare is of a future Hamlet. It is for the master to turn all this nascent enthusias best account. It is better for a chil tenderest years to take a small part really noble play, however much be comprehension, than to learn the rubbis put forward so often by way of "recita the village-school, or Sunday-school e ment. I saw an infant in its mother's the Warwick festival, coming on as pa crowd. One word more. It is of the e the Folk-Play that it should be enacte as possible, in the great "out-of-doors." would be little of Puritan opposition to th were this fully recognised.

Special Method in Primary Reading and Oral C. A. McMurry. 1–198 pp. (The Macmillan 2*s.* 6*d.*—The name of the author promises interesting pages and full bibliographies. Perha on education printed of late years has given importance to oral work as the volume before compelled teachers to study the art of story-tellin their own voices, to be aware of the strong points in their own descriptions, we should be o road to the interested school. It is not too m that men and women who cannot tell a story never have teachers' certificates granted to t miss, as usual, all reference to the undoubted p children possess of re-telling, and even of inven lent stories excellently, with all the refinements o tone and exact gesture. But the apologist for t not, as yet, in print.

HE 1906 CODE FOR PUBLIC ELEMENTARY SCHOOLS.

newest Code, unlike most ladies' letters, t its business end at the beginning, and, e all recent documents from the Board tion, is most interesting reading in its memorandum. No less than seven hs are required to deal with the more t changes, and we are pleased to record e are in keeping with the spirit of the i with more enlightened ideas upon the of the masses. Book after book has tten upon Disappearing London, and ıe writer must arise with a volume on ring Codes. Time was when the school- ent to it for his syllabus of work; time n he scrupulously taught nothing else was ordered in its pages. These orders tened into suggestions, and H.M. In- s not now even an annual visitor. His e to take a broader and more compre- iew of the educational work being done trict rather than in a school, and to he Board of Education with instructive pon his work as a whole, or upon some roblems, which have either appeared as fficulties, or have been successfully with by earnest teachers in different o this we give unstinting praise. The nspectors are precisely the sort of men only understand this phase of the work keenly rejoice in doing it, and the Board that, however well it has been served in it is likely to be more efficiently served ıture by this new regulation. The in- imself will become a valuable adviser to authorities, and the machinery which provincial effort with imperial direction more smoothly and much more effec-

seven changes, two stand out as likely ar-reaching consequences in the popular the provision for organised games and struction. On both these questions the ind has been exercised for some time, st the movement has begun and the may be relied upon to develop the sug- for themselves. In future a game of football, hockey, or rounders may be ıring the official school hours as part of ol routine. Formerly participation in l games has been made possible for ele- school children only by the voluntary teachers outside of school hours. Most ly does the Board recognise this when that the sacrifice of their spare time, ose teachers have spontaneously made, rewarded by an improvement in the ıd *esprit de corps* of their scholars, so as to afford every hope that a natural in these respects will follow the inclusion ıised games in the school curriculum. ıity must not think that the school games ıe game itself. In business transactions we think of a definite beginning and a definite end; in training the young the end is indefinite, a long, stretched-out series of consequences more far-reaching than teachers dare to contemplate, and this is wisely emphasised by Mr. Morant when he says, "The lessons to be learnt in the playground are indeed invaluable. Children who take part in properly organised games will learn, among other things, to 'play the game,' to 'give and take,' to devote themselves to, and efface themselves for, a common cause, to feel pride in the achievements of others, to accept victory with becoming modesty, and defeat with due composure, and, speaking generally, to acquire the spirit of discipline, of corporate life, and of fair play." Of the forty weeks compulsory attendance, forty afternoons, or eighty hours, may be spent in properly organised games. A very suggestive book on games other than those mentioned in the Code, and suitable for teaching children the beginning of regulated play, is published by the Educational Supply Association under the title of "Organised Games for Elementary and Secondary Schools," by Mr. Thomas Chesterton. A very valuable pioneer article on this subject by Mr. R. Cary Gilson, headmaster of King Edward's School, Birmingham, appeared in THE SCHOOL WORLD for April, 1905.

The reference to moral instruction is in response to a widespread feeling that although their opportunities are brief, the teachers can yet do much to lay the foundations of conduct. They can endeavour, by example and influence, aided by the sense of discipline which should pervade the school, to implant in the children habits of industry, self-control, and courageous perseverance in the face of difficulties; they can teach them to reverence what is noble, to be ready for self-sacrifice, and to strive their utmost after purity and truth; they can foster a strong sense of duty, and instil into them that consideration and respect for others which must be the foundation of unselfishness and the true basis of all good manners. This hint of 1905 is now translated into action, and moral instruction should form an important part of every elementary school curriculum. The teaching may either be incidental, occasional, and given as fitting opportunity arises in the ordinary routine of lessons, or systematically and as a course of graduated instruction. The teaching should be brought home to the children by reference to their actual surroundings in town or country, and should be illustrated as vividly as possible by stories, poems, quotations, proverbs, and examples drawn from history and biography. It is important that it should be no humdrum repetition of ancient saws, but a forcible and spirited application of the teacher's own moral knowledge and moral sense. He is asked to bear in mind the famous words of Bishop Butler—"Our province is virtue and religion, life and manners, the science of improving the temper and making the heart better. He who should find out one rule to assist us in this work would deserve infinitely better of mankind than

all the improvers of other knowledge put together."

As was inevitable, the question of vaccination comes up. Formerly the Board rigidly insisted upon the vaccination of all its teachers, and firmly resisted the dispensing powers of the late Acts. Now to remove this anomaly, the obligation is to be relaxed if the teachers declare themselves to have a conscientious objection. But very adroitly the Board throws the responsibility of the presence of unvaccinated teachers among large numbers of children upon the local authorities, which must first give their consent to the employment of such teachers.

In a modest footnote of three and a half lines a most important change is foreshadowed for August 1st, 1909. For the next three years local authorities are urged to be up and doing in providing training colleges for teachers, and, as a spur, liberal grants are to be made from the taxes to aid them in this work. It is hoped that the number of trained teachers will thus be largely increased, and that posts will be reserved for them in the schools belonging to the district in which they were trained. This does not touch the question of the supply of teachers, and school managers are strongly recommended to read Prof. Adamson's article on this subject in THE SCHOOL WORLD of November, 1905, as a corollary to Article X. of the Code.

We hasten slowly, and the Board of Education, following the advice of Bacon, does not encourage experiments on a large scale, but the careful perusal of this newest Code convinces us that we are progressing. Each year our administration grows wiser, more liberal, and more really educational; and it is a source of regret to us that the general public is so keenly engrossed upon Westminster that it quite overlooks what is being done for it at Whitehall.

THE USE OF LANTERN SLIDES IN TEACHING.

By F. L. LOWTHER, B.A.
Headmaster of the County Intermediate School, Milford Haven.

EVERY teacher of geography and history must have felt at some time or other the need of adequately illustrating his lessons—it may be in the ordinary course of his work or for some more specific purpose. Science teachers will have experienced the same difficulty, although in their case the necessity for copious pictorial illustration of a varied character is not so indispensable. The dry-as-dust treatment of history so frequent in schools even at the present day has deservedly made it an unpopular subject, more especially in lower forms, where, owing to the large size of the classes, it is not always practicable to have recourse to pictures of historical events. Geography has not, perhaps, suffered quite to the same extent, owing to the existence of the school atlas, which has, moreover, rapidly developed of late years, and should prove an eminent teacher of geography.

Though we are fortunately rid of politi which were overcrowded with place-nar ing inevitably to confusion and obsc there are still comparatively few atlases suitable for all the various purposes maps are required. Few school atlas maps to illustrate the climate and veg even the continents, the scale is necessa and unsystematic, while fabulous chains and non-existent rivers are cons curring in new and revised editions. isolated cases these defects are remedi publication of supplementary maps and to illustrate the rainfall, density of p land-relief, and distribution of the min particular country.

The geography of Wales is well illu this respect by the Welsh edition o " Elementary Atlas of Comparative Geo which contains an excellent series of ma tables, and diagrams, together with ductory lesson in map-reading. The intended to accompany Hudson's " G of Wales " (Macmillan), and completely requirements of teachers by furnishing illustrative matter for their lessons. U conditions the drudgery of the usual g lesson becomes a delight to pupil an alike. No attempt has been made, so know, to do the same thing for Engla land, or Ireland. What is required i a similar series to illustrate the geograp British Isles and Europe.

Wall-maps are equally unsatisfactory small schools they are expensive luxuri of them which are to be seen hanging walls are hopelessly out of date, and ca replaced very gradually as funds permit Regulations for Secondary Schools, Board of Education has recommended teaching of physical and commercial g separate maps should be used for the p illustrating configuration, political fa commercial routes. Good wall-maps alr for this purpose, but a systematic seri plain physical conditions, *e.g.* climate tation, has never been attempted even f continents. In addition to relief wall- teacher who has decided to deal with g on modern and scientific methods has t globes of a suitable size for class-demo diagrams, relief-models, and a county-m he is properly equipped for his ta teachers would hesitate before applying a formidable list of requirements, to sec would require more than an average a persistency and perseverance. Such, a few of the difficulties confronted by t desirous of proceeding on intelligent lin teaching of geography.

The case is even worse with regard t For illustrative purposes, we have at ou merely a miscellaneous assortment

ibles and chronological charts, colour re-
ons and prints of detached historical
for occasional use only. Hölzel's his-
ictures are constructed, it must be ad-
on a systematic plan, as they contain the
monuments of antiquity—Roman, Greek,
ptian—while the "Coloured Illustrations
ory Lessons," published by Messrs. H.
and Son, are distinctly good, though
lly small. There are other sets, pub-
Messrs. Hachette, Hirt and Sons, and
Arnold, the whole of which would scarcely
bare requirements. A better plan is to
e illustrated edition of Green's "Short
of the English People" (Macmillan) or
Knight's "Old England" (J. Sangster
, which are sufficiently large to fix on an
means of a wooden ledge in front of the
rd. In this way the pictures are distinctly
o all when standing around the easel
taller scholars judiciously placed behind
ller ones, and it should be possible to
o their minds a faithful and accurate
ion of the architecture, customs, games,
our of the period in course of preparation.
ested classes are quite unaware that they
ing history, and this fact alone speaks
for the method.

isfied with these limited and unsatis-
sources of supply, a very large and
ncreasing number of teachers have ven-
the use of the optical lantern, which
ords the only solution to the difficulty of
illustration.

teachers are deterred from utilising the
n school owing to the difficulties which
them to be inseparable from its use, *e.g.*
ening of the room, a convenient and con-
supply of gas, the manipulation of the
and the preparation of slides. In spite,
of these difficulties, its use is daily
ground as a means of intelligent and
instruction, and there are few schools
employment is not possible for graphical
rial illustration. I agree with the writer
terns for School Use" (The School
February, 1905) that it should be fre-
sed, and as a matter of course, and not
s a reward. It should be an institution
ls of all grades, and should form an
part of the equipment.

need be no objections on the score of
room or of expense. A separate room
sential, though it certainly is an advan-
as to expense, a lantern can easily be
pay for itself by giving a few evening
ments during the winter months. The
ry outlay need not exceed £2, as lan-
be purchased for 27*s.* 6*d.*, which are
table for school purposes, and are fitted
ndescent burner, mantle, and chimney.
rigid tripod stand, capable of being
nd lowered, is almost a necessity,
a screen elevator can be dispensed with
a blank wall for a sheet. An inex-
pensive lantern like the above gives very good results for an image 5 ft. square, which is quite large enough to be seen by a class of twenty pupils. Care is necessary to regulate the supply of gas, which affects the illuminating power of the mantle very considerably. A four-burner acetylene jet and generator, or even an acetylene bicycle lamp, may be substituted with advantage for the above. The jet must be placed at the right height and at the proper distance from the condenser, which otherwise is liable to get overheated and cracked.

It is quite unnecessary to darken the room completely if diagram slides are used, and it is always advisable to avoid exhibiting slides which require complete exclusion of light. If necessary, atlases, text-books, or note-books should be referred to as in the course of an ordinary lesson. Sufficient light can be excluded by the use of dark blinds and (where there is an excess of light) by nailing a piece of wood to the window-sash, so as to overlap the edge of the blind. All that is necessary, however, with good, home-made slides is to shade the screen well and to allow no direct light to fall upon it. Instructions for making these slides are to be found in the article on "Lantern-slides" in The School World for March, 1903. In addition to the methods described there, I have found jelly-graph ink and vitro ink (sold by Messrs. J. J. Griffin and Sons) very convenient for drawing maps and diagrams on glass.

Home-made or diagram slides possess an advantage over the ordinary view-slides, as we can by their aid emphasise just the points we are explaining. For graphical and pictorial illustration, we are no longer at the mercy of others, but are at liberty to work out our own particular views and depict exactly what we want.

The Diagram series (600 slides) has been prepared to provide the necessary material for a systematic study of geography and history. The original maps have been compiled from the most trustworthy sources, and are specially drawn for projection. With a sufficiently bright light and a slightly shaded screen they do not require a completely darkened room, which is a great consideration in the maintenance of discipline, and enables the class to take notes and make sketches as in an ordinary lesson. Important towns are indicated by dots and capital letters, which can be distinctly read by a large class; land elevation is shown by contour lines and gradations of colour carefully selected to show the most striking features of the regions studied. They contain none of the usual faults of overcrowding so common in political maps, but, on the other hand, modifications have been introduced with a view to emphasise important features. By the use of the orographical maps, the class can be led to discover deductively the trade-routes, the mountain passes, and the physical barriers to communication. The river-basin maps also provide admirable material for drawing from the pupil his own deductions from the drainage areas. The

series on climate includes world charts of isobars and isotherms, winds, ocean-currents, and rainfall, as well as the character of the vegetation and its development in summer and winter. Besides the above, there are others dealing with economic questions, *e.g.* food-supply and raw materials, political map-slides showing railway routes and commercial centres, together with a considerable number of historical maps and diagrams.

A beautiful series of hand-maps and outline maps has been designed for the use of pupils in recording the features which have been dealt with by the teacher during the lesson. The Diagram Co. (West Barnes Lane, New Malden, Surrey) is prepared to supply the slides at 2*s.* each net, or they may be hired at a very reasonable rate by applying at the end of the term before which they are required. Teachers can also obtain special maps and diagrams prepared from their own designs.

Slides which are needed constantly for class-teaching should be purchased or made, while those required for a special purpose may be hired, *e.g.* the series on loan from the Agents-General of Canada and Tasmania, which depict the industries, scenic features, and mineral resources of these colonies. To arouse an interest in contemporary history, it is well to hire a few slides occasionally to depict such events as the secession of Norway, international treaties, the formation of the Australian Commonwealth and the signing of the deed of Federation.

View-slides are more suited for use in connection with school societies than for class-work, but there is no objection to their occasional employment on centenary celebrations, or for patriotic purposes. "Empire" Day might be suitably celebrated by giving an address on the growth and development of the British colonies and dependencies, or by reading a lecture such as that by Mr. W. K. Stride, entitled "A Bird's Eye View of the Empire." A set of sixty-five slides has been issued by the League of the Empire to illustrate this lecture, and as they are divided into six sections, it would be quite practicable to show a few of the sections at a time so as to cover several lesson periods, and not interfere with the time-table.

A representative series of slides illustrating the British colonies, their products and industries, is also supplied by Messrs. Geo. Philip and Son, which assist the pupil to realise the character of the countries and their inhabitants.

For evening entertainments many will be glad to take advantage of the Free Popular Lantern Lectures issued by the S. H. Benson Lantern Bureau, 1, Tudor Street, E.C. Application for the loan of the slides has to be made some time in advance, but the only other conditions laid down are that the advertisement slides be exhibited at the end of the lecture and the slides forwarded, carriage paid, to the next exhibitor. Last winter the series included the "Life of Nelson," "Explorations in Africa and Australia," "Glimpses of the Far East," "The Story of the Oc" "The Indian Mutiny."

Messrs. Walter Tyler and Co., 48–50 Road, S.E., have an enormous stock slides, which can be purchased, hire changed. These deal with every conce ject, and are made up in sets of fifty, be hired for 3*s.*, or at the rate of 8*d.* Selections can also be made from va which is a distinct advantage. The sci have been specially drawn from natur well adapted for school use. The ge series is particularly full and complet cludes such topics of the day as Moori scenes, native South African races, Arc Naples, the Prince of Wales's visit to the cathedrals of England and Wales. also 500 slides dealing with the England, which are arranged in sets t the different periods and dynasties.

I am aware that in the minds of man there are grave objections to the use slides in school, but these arise almost from the selection of unsuitable mate as view-slides chosen more for their art than for their scientific usefulness. conditions I have named, there should culty about discipline, and to allow the develop into an amusement and nothin a weakness on the part of the demonstra lantern should be considered as the c of the atlas or text-book, and not a sub them.

Some teachers may feel inclined to their own picturesque descriptions scenery; others condemn the tendency to the craving for the pictorial; bu natural desire on the part of the schol I think, be satisfied rather than repres power of vivid and graphic verbal d too, is not given to all alike, and thoug it may be cultivated to a moderate e no description is perfectly accurate, n be certain that our words convey a cle the child's mind. Indeed, it is certain very often do not. However that ma lantern is systematically used now schools, and its use is daily extending discovered that the difficulties connecte employment disappear with a little pr experience.

In many parts of the country sche already been started to obtain a compl graphic survey of each county. By organised effort on the part of the the co-operation of teachers of other becomes comparatively an easy task t set of negatives to illustrate the hi geography of one's own county. Of en is plenty among schoolboys; it only req ing and training. The chief difficulty i what to photograph, and it should be plained to them what feature you w duced. Landscape views are of lit except where there are deep and narr

ther prominent feature included. Ample or a commencement will be found in ical remains, the Norman castles and cal ruins, the earthen mounds and settle- arly people scattered about the country. work of the sea and atmospheric an be illustrated by sea-caverns, sandy pebble ridges, pot-holes and blow- is always possible to arouse a healthy such subjects as land sculpture and n. In order to depict a particular type , *e.g.* the Lizard peninsula and its flora, obtain from others, if possible, views holiday-travel, and then complete by to such works as Avebury's "Scenery d" and Geikie's "Land Sculpture."

IIC FACTORS IN EDUCATION.[1]

of many defects of style and manner, a really valuable book, and one that arises for all concerned in education he most important facts with which ex science has to deal. The writer has read the authorities whose names he y artlessly parades, but he has also iem.

k shows that the child is in perpetual and that unless this movement is ly and skilfully directed, inevitable e result. It is full of good sense and nce." Developmental facts being ad- writer shows conclusively that all sorts stakes are being constantly made be- plans of instruction involve accessory esses before we have trained elemental ons involving fundamental nerve r, without jargon, we make little child- effect finicking and minute processes have trained them to larger and easier . No one, after reading this book, h a child to write or to sew before he or to read aloud before he can speak ew things have done so much mischief ools as these two last-mentioned and ors, with their concomitant armies of Readers" and systematic "Copy The sterility of the schools is amply by the destructive "thoroughness" sowed sand over the kindergarten, with ations," and in the school, with its mis- ccuracy." Every one who watches ge) children must feel that the pedantic analysing movements or sounds, and g these analytical results the starting- he child, is a fundamental and cruel reversal of the natural order."

hor shows clearly that the stages of (or "motor activity"), of which educa- make use, are: first, random action, sive activity in the effort to focalise n inhibition in order to control irre- levant activity, and finally the achieved end of perfect action. Here is a whole philosophy of practical education. The "manual training people" (what a phrase!), "some of them" have been grave sinners in this matter; they have followed the "logical" rather than the "psychological" order, though fault may be found with such a distinction, already sanctioned, nevertheless, by competent authority.

We do not remember to have seen in any book so good an account of the psychological purpose of imitation as we have here; for "we see and hear in terms of our motor habits"—as Berkeley taught most of us, apparently in vain.

We like the author's account of character: "Just the sum of these settled *modes of action* which are practically unalterable." Nothing but action will make character. Rightly, too, the book makes much of the theory of fatigue. The excessively minute and complicated adjustments which much of the school work known to us entails wastes an enormous amount of conservable energy and saps vitality; and yet with the growing complexity of life a greater *effectiveness* is needed by the individual. He must not have less "education"—indeed, he needs more—than his forefathers; but it must be more economically directed to its proper end.

There are good *résumés* at the end of each chapter of the book, and at the end; and questions by which the student and teacher can test the effectiveness of the instruction which preceding chapters have given. In spite of some cant and much irritating English, it is a right good book, and well worth more than one reading.

Factors in Education." By M. V. O'Shea. 320 pp. Co.) 5s.

THE DEVELOPMENT OF THE GIFT OF DRAWING.[1]

THE early efforts of the budding artist of tender years to give graphic expression to his ideas have always been a matter of absorbing interest, not only to the adoring family circle, but to a much wider circle of more impartial critics. In the records of Sully, Perez, Ricci, Luckens, and others we have already the invaluable impressions and opinions, from many points of view, of highly competent observers who have devoted some attention to the artistic, educational, physical, and psychological aspects of this phase of child development.

The latest of these explorers into the phenomena which accompany the awakening and growth of the child's power of graphic expression is Dr. Georg Kerschensteiner, Superintendent of the Munich Municipal School Board, who has conducted a systematic investigation among the pupils of the schools under his charge, and has collected and examined, during the seven years over which these investigations were spread, the

1 "Die Entwickelung der zeichnerischen Begabung." Von Studienrat Dr. Georg Kerschensteiner. xv.+508 pp.; 847 illustrations. (München: Carl Gerber.)

spontaneous unaided drawings of 60,000 children of all sorts and conditions, from the earliest school age upwards.

The results of this gigantic undertaking, to the number of some 500,000 drawings, he has analysed, classified, and tabulated with such a characteristically national thoroughness, according to age, sex, physical and intellectual ability, home influence, environment, and so forth, as to leave no doubt that his conclusions, if not always entirely convincing, have been by no means lightly arrived at.

Dr. Kerschensteiner has published an account of his investigations in a sumptuous volume with the title "Die Entwickelung der zeichnerischen Begabung," which takes its place at once as a most valuable contribution to our available literature on this important subject.

Premising in his preface that "the earlier investigations of other researchers on the mode, the development, and the attainable degree of the child's capability for drawing have stopped at the point where they would begin to be of practical importance for our ways of instruction," he sets forth a string of questions bearing on various vital points of the subject, as, for example, "What average work is to be expected at the different ages and with different groups of subjects? At what age does the power of mastering certain tasks appear? Is drawing from memory or from nature of greater importance to certain ages? Is there any remarkable difference of the sexes as to their gifts of drawing? What relation is there between intellect and power of graphic expression? Is the development of the power of drawing in town children the same as in country children?" &c., to which and other questions the author claims that his book gives clear and distinct answers.

Dr. Kerschensteiner has supported his arguments with a number of exhaustive analytical and comparative tables, and concludes with a valuable and serious attempt to formulate a scheme of work based upon the results of his inquiries.

A most fascinating feature of the volume is the inclusion of upwards of 800 of the children's drawings, in black and white, and 47 in colour; they are reproduced in facsimile, and thus preserve that delightful spontaneity and *naïveté* which add so much to the charm of a child's drawing. We have representative selections of all the favourite childish subjects—horses, dogs, trains, tramcars, trees, ducks, soldiers, and so on, all treated in the manner so familiar to all who have watched children draw—and we may thus trace the evolution of, say, a man, beginning at the primal type of lunar head, with wiry arms and legs, and dots and gashes for features, through all the various stages of development and elaboration so ably described in Sully's "Studies of Childhood."

It is interesting to note that Dr. Kerschensteiner joins issue with some of the authorities mentioned above on the psychological aspect of *the child's drawing*. Sully, for example, remarks (*ib.*, p. 334):—"The representation is chosen as a symbol and not as a liken element of a non-imitative or symbolic representation will be found to run th whole of childish drawing." Again (p "The child is content with a schematic which involves an appreciable and ever able departure from truthful repres And yet again (p. 389):—"His first dr thus, in a sense, playthings, which, lik tered stump of a doll, his imaginativ corrects, supplements, and perfects."

To all this Dr. Kerschensteiner replie much-heard-of assertion, that it is the agination which makes allowance for sions in its drawing, is a fairy-tale; see any omissions, because it has nev a form—because it has drawn simply to its knowledge. The child is not a as some of the child psychologists cla child the lines do not *mean* something something. The drawing only become when we are clearly conscious of the between the picture and the reality."

This view appears to be borne out b that in nearly all drawings of children in general those points only which f acteristic and distinctive features of represented. No child ever draws a out a head (though it often combines body), or a chair without legs, or a tra wheels, or a church without a steepl dition to a figure of long or short hai parasol, pipe or satchel, and so forth, distinguish whether a man or woman is This power of characterisation soon f ever, if the child attempts to differen between cat and dog, hen and duck, o flower, unless the difference happens t marked. Sully has remarked the almos propensity of children to make the featu the whole head area—which again seem out that the child *sees* only those pa impress themselves on its imagination, not arbitrarily select them for representa may observe in older students comm draw from life the very common te overrate the features in proportion t of the head—and *they* are not symb are striving with might and main, as " Cockney art master puts it, "to get it like."

Although the suggestions for schem based upon these investigations will off siderable novelty to those familiar methods of some of our best elementa there are yet many features which cl tion. For example, the author advo lower classes, drawing of common, v objects, in soft pencil or chalk, *fro first*, then corrected (by the child) from and then again from memory; all c lines and mistakes to be left in, no other eraser to be used, no mechani abstract forms and small drawings to l

which is sound advice and much to be ded.

almost inevitable in a work of such scope gnitude, the book contains a certain of commonplace and reiteration of the

At the same time there is much that interesting and suggestive, opening up able avenues of thought and unveiling nsuspected potentialities in the work of hful draughtsman.

erschensteiner is to be congratulated both iginal scheme of his book and on the way as been carried out. It is a book that ppeal, as the author ventures to hope, to artists, teachers of drawing, psy-s, pedagogues, art historians, and gists, but also to every man who takes e interest in the important questions of lopment of children.

ENCE TEACHING IN FRENCH SCHOOLS.[1]

brochure will be of interest to those ho are interested in science teaching, if nly because of the consolation it affords ing how much, after all, we, in this are ahead of the Continent. The author es the chemistry and physics syllabus of ch higher grade schools and discusses rk in comparison with that of German

The French schools are divided into a ary school with four classes, a lower ith four classes (vi., v., iv., iii.) and an ool of three classes (ii. and i. and upper). wer school, pupils are allowed to choose divisions A and B. In the former, Latin from the sixth class onwards and volun-ek from the fourth form; in the latter, ention is paid to French, science and

Comparison of the age of the pupils at they enter the upper school a year n France than in Germany and a year France than in Austria. The number of voted to science are very few and prac-k is only undertaken in the three classes per school.

thor then proceeds to criticise the French from the German point of view. What of science teaching actually is in German vill be gathered when, besides admitting s criticism—" On ne sera donc pas sur-j'aie trouvé, même dans de très grandes es établissements considérables et fort où les salles de classe, les laboratoires et tions sont fort insuffisantes "—he urges ssity that a simple workshop should be in every school together with a certain of apparatus. He also pleads for at and a half to two hours at a time being to science.

il effect of impending examinations both in France and in Germany on physics teaching is alluded to, tending, as it does, to the overburdening of the pupil with facts which are subsequently rapidly forgotten. The abolition of the examination in physics in Germany is advocated. Subsequently, the author takes the view that physics should be taught in the form of selected problems, so that physical facts may be presented in logical sequence to the pupil and time afforded him to digest them and accustom himself to new conceptions. " Solche Problem-Anordnungen sind erst noch zu schaffen. Hier liegen die grossen Aufgaben des physikalischen Unterrichts der Zukunft." Does this mark the dawn of the heuristic method in Germany?

After spending four years at a German university the writer has been forced to the conclusion that the merits of the German school system are grossly exaggerated. The system is one which tends to destroy all individuality and it is difficult to resist the impression that the pupils have been taught in a purely mechanical manner, sense of proportion and judgment being rarely met with.

of the Physical and Chemical Teaching in the Higher Schools Wissenschaftliche Beilage zum Jahresbericht des Dorotheen-ealgymnasiums.) Herman Hahn.

DOMESTIC ECONOMY AS PART OF THE SCHOOL CURRICULUM.[1]

I.

By E. M. Leahy,
Headmistress of the Croydon High School for Girls.

During the past two years an experiment in domestic science training has been carried out in certain of the High Schools belonging to the Girls' Public Day School Trust. The details of organisation and curriculum have varied in the different schools, but the main purpose in each has been to provide a systematic and thorough course of training in domestic science for girls whose ordinary school course is finished. This is the essential idea of the scheme, for those headmistresses who have adopted it are of opinion that the greatest permanent benefit can be gained by their girls from a course of training when the ordinary school career is over. The sound general education which the girls have received up to the age of seventeen, eighteen, or nineteen has prepared them to work with intelligence and accuracy, and the special benefit of the training received in science and handwork is evident when neatness, precision, and quickness are required, as in cookery and practical household work.

In my own school the scheme of work is arranged for a year, with a possible continuation course of a more advanced character for students who have taken the first-year course. The age at which a girl begins the course varies with her position in the school. We have had girls of nineteen and eighteen taking the training after gaining the Joint Board Higher Certificate in the Lower Sixth form. We have had several old girls who have returned to take the whole or part of the course. We have also had girls of seventeen who have come from the Upper Fifth, Lower Fifth, or Fourth Remove forms. No girl is allowed to take the course until she is at least seventeen, for we could not allow her ordinary school education to cease before that age. The result of this rule has been beneficial both to the school and to the

[1] Being papers read at the Annual Conference of the Association of Headmistresses, June, 1906.

girls. Several girls who would have left the school at the age of seventeen or earlier, on account of inability to do the work of the higher forms, have been encouraged to stay on for the year from seventeen to eighteen as domestic science students. It has been observed that some of these girls have done remarkably well in practical cookery and dressmaking, though in the theoretical work they cannot reach the level of the girl who begins her work after a year or more in the Sixth Form.

Our curriculum has been planned to provide definite training for home life. It therefore includes the essential subjects of which the mistress of a house must have some knowledge—knowledge which is, of course, equally valuable for the woman who takes her share in public life. The doctors, nurses, members of Boards of Guardians, district visitors, school managers, the head- and assistant-mistresses of the future, will be more valuable members of the community if they are equipped with the practical skill and knowledge the lack of which, perhaps, some of us have felt. The girl who is going to college is, as a rule, unable to get this training during her school days. It is to be hoped that she will take it later on. We have had one old girl who has come to cookery classes after taking the Classical Tripos at Newnham.

The classes are all held in the mornings, with the exception of the first-aid and home-nursing lectures. They are held in our preparatory-school house, which provides a needlework room, a good kitchen, and domestic offices. A domestic science mistress, who was trained at Battersea Polytechnic, is in charge of the work of the students. She teaches cookery, household management, needlework, dressmaking, laundry-work, and millinery. Hygiene lessons are given by the school science mistress. Lectures on first-aid to the injured, home nursing, and care of young children are given by a lady doctor, who is one of the lecturers authorised by the St. John Ambulance Society. The students who take the full course attend from 9.15 to 1 every morning. The others come at the hours of their various classes. On certain mornings of the week optional classes are arranged during the first hour for French and German conversation and English literature. Some of the students also keep up their drawing and painting by joining one of the Upper School divisions on one morning in the week.

A cookery demonstration class is given once a week, and every student does practical cookery twice a week. The syllabus followed includes considerably more than that required for the examination in plain cookery held by the City and Guilds Institute. Most of our students of last year passed this examination. The work in cookery is thoroughly practical; for example, cleaning of saucepans and utensils is done by the students themselves, and no elaborate or expensive apparatus is used. Needlework includes cutting out and making garments, patching, darning, and mending garments and household linen. Parallel with this is a course of dressmaking.

Household management is a comprehensive term, including cleaning of silver, washing and care of china and glass, general management and cleaning of a house, simple upholstery, and some instruction in keeping accounts, management of money, cheques, &c.

The laundry-work taught is that of washing and getting up lace, muslins, and finer articles of clothing. In the summer term this is not taken, and a course of millinery lessons takes its place. Also in the summer term it is found advisable to have less time given to practical cookery. Last year a short course of lectures on gardening (with practical work) was arranged for our students. Examinations are optional. The majority of the stud the certificates of the St. John Ambulance S first-aid and home nursing, the City and Guilds Institute cookery certificate, and the Board of certificate for elementary hygiene. Much interes taken in the work by the girls, their parent mistresses on the school staff. The result of our experiment has so far been encouraging, and w be able to continue this course of training valuable addition to the work of the school.

II.

By FRANCES R. GRAY,

Headmistress, St. Paul's Girls' School, Brook (

IN arranging this part of the work at St. P School, I received some valuable suggestions d to other schools, particularly from King Edw School at Birmingham and one of the Écoles in Brussels. A special report on Belgian t domestic economy has been written for the Education by Miss Helen Matheson, and will useful to anyone who desires to organise such In a secondary school it is, of course, necessar the teaching of domestic economy to very diff ditions from those which obtain among elemen children.

The cookery lessons which I am asked to d a regular part of the work of Forms IV. and Thus a girl who enters the school at the age will have two years of cookery lessons. The are given at an age when girls need a good deal of work, and when they demand plenty of physic After Lower V. Form age (fourteen to fifteen becomes an optional subject.

Each lesson lasts one hour. This does not girls to see the beginning and end of every dish at which they work. But they see the san dish in various stages on different days. For ex one day two girls will prepare a sirloin of beef ing; on another they baste a similar joint; o they make the appropriate gravy. Or they pre for soup on one day, and on another skim the Each division consists of not more than sixteen g ing in pairs. During the first year they learn various meat and vegetable soups, to treat vege meat in all ordinary ways, and to make a g puddings. During the second year they go over ground, with a little more elaboration. One ter is given to invalid cookery. All that is ma lessons is eaten at the school dinner. This help the work practical.

The equipment is as simple as possible. kitchen is like a home kitchen, and the girls a to accommodate each other and to encounter s difficulties they would have to conquer in p meal at home. One small range and a gas sufficient for a division, though the lesson is given in the larger kitchen, where the dinner for persons is being cooked. Plenty of utensils I necessary, because I do not expect each girl to pot or pan as she uses it; she is taught ho everything in the kitchen, but it would be a w time to allow her to do it every day. The ob teacher is not to give great manual dexterity work, but to imprint on the minds of the gir methods of working.

Practical lessons are given in the cleaning o of metal in domestic use, china, glass, and

of the kitchen table is always much enjoyed. ie course a few lessons in the elements of laundry given, especially in the washing of the flannel vhich the girls cut out and make for themselves. In reply to a question on the educational value ork to girls of this age, Miss Gray said that in g it she had not before her mind its value as ymnastic, although the training of hand and eye lue of its own, but the desirability of implanting ring a taste for domestic pursuits at an early wished to guard against the tendency among s to grow up ignorant of the duties and the of home life.

E GEOGRAPHICAL APPARATUS.[1]

By G. McCROBEN,
istress of the Girls' High School, Wakefield.

preface to Pinkerton's Atlas of 1815, the tic writer says :—
raphy is a study so universally instructive and that it nearly a y been even to whose ts are n from esearches. ivial con- of the ircle, in avidity currences nes, preg- ed above rs with l import- ges that he very of States ires, geo- has be- habitual to the emale as he profound philosopher."

FIG. 1.—The Geography Garden, Wakefield High School for Girls.

ay be true for the "elegant female," but until can hardly be said that geography was so popular with the average schoolgirl. At present, however, change in views on teaching geography and e of apparatus, the subject is certainly a more one.

short paper I shall not discuss any syllabus or of work, but shall only describe two kinds of ntal apparatus, the stereoscope and the geography These are used to obviate two great difficul- ch children have to face in learning geo- viz. : (1) the difficulty of realising places and never visited; (2) the difficulty of understanding To anyone who has travelled, a map is a very g and suggestive thing. It is an "arch where gleams that untravelled world"—but to anyone not travelled it is apt to be rather a dull affair. map of Switzerland, for instance. To anyone who has been there it calls up a delightful vision of snow-covered mountains and glaciers. But to the average child a glacier is pictured as a "river of ice" gliding smoothly down between the mountains, with moraines neatly arranged upon it. Lantern-slides and photographs help to dispel the illusion and give a truer picture, but they lack relief. Stereoscopes, which show the photographs in relief, are very much better, and really help to create a mental picture by putting the child in the position of the traveller. In looking at a stereograph of a glacier, for instance, the child seems to be actually on the ice, and obtains a truer conception of the roughness and inequality of the ice-falls and surface than can be obtained from mere description or even from photographs and slides. In using this apparatus, each child in the room should be provided with a stereoscope, and all should be looking at the same stereograph. The children are then in a position to describe what they see, instead of listening to a description given by the teacher.

I find it a good plan to have a room in which all geography lessons are given, in order to obviate the difficulty of carrying apparatus from one room to another. The walls are hung with relief maps, with a map of the world to correct the sense of proportion, as these relief maps are made on different scales. There is a lantern lighted by incandescent gas, so that it is only the work of a few moments to draw the curtains, light the lantern, and look at a slide which illustrates any particular point. There are also stereoscopes and stereographs, a slate globe, a large compass, and an orrery.

The second great difficulty which children have to face is that of understanding a map. In the syllabus issued by the Royal Geographical Society in 1903, this point is dwelt upon :—"It is a serious difficulty in geography that the mind has to deal with facts that cannot be directly observed. The relation of places hundreds of miles apart, and separated by surfaces of very diverse character, have to be grasped in a single mental observation, but the observations by which these relations have been determined can be made only piecemeal. Hence arises the necessity for representing on a map the facts of nature, which are the real subject of study. It is very important, therefore, that the learner should be brought to realise two things: first, that geography is actually based on the observation of nature; and, second, how the map is connected with such observations, and may be made to stand for an extent of ground that no individual can directly observe."

In the geographical exhibition of relief maps, &c., of that year, there was a small relief model, about ¾ yard square, intended to show in that small space a water-

[1] read at the Annual Conference of the Association of Head- June, 1906.

shed, river-basin, delta, harbour, and volcano. The idea seemed good, but the model too small; it occurred to me that one on a larger scale might be of use, especially if the mountains were made of real rock and soil and the river of real water. As a result, I had a model of this kind made in the school garden on a piece of ground 25 ft. by 18 ft., with mountains from 4 ft. to 5 ft. high. The water for the rivers is carried through hose-pipes to the tops of the mountains, and the children can see the river and its tributaries winding down to the valley, and gradually broadening until they empty themselves into the grating that is supposed to be the sea. It is on a sufficiently large scale to be very real to small children, and one remembers how large anything one's own height used to seem. They get more idea of the meaning of such terms as water-shed, river-bed, mountain-range, peak and valley, than from mere description or even from photographs, and they see before them practical illustrations of source, mouth, right and left bank, bed, basin, and even delta. It is, in fact, a school journey on a small scale.

From this model, also, they learn by practical experience how maps are made, and this forms a part of the practical geometry. Two sticks or umbrellas form the ends of the base-line. Large home-made protractors, with hat-pins as pointers, are used to calculate the angles between the direction of the peaks and the base-line, and so maps and plasticene models of the mountain-ranges are made. The tops of the mountains can be made white with lime to mark the snow-level; glaciers can also be made.

FIG. 2.—The Geography Garden, Wakefield High School for Girls.

Again, there is other practical work done in the garden. The girls lay a miniature railway-line each year; they first level the track with the aid of a spirit-level, then cut the sleepers, and lay the lines with their fish-plates and chairs, taking care to keep them even and parallel; where necessary, they build bridges or cut tunnels for the passage of the line. At the end of the summer the line is taken up, ready to be re-laid by a fresh set of girls next year. The first year it ran through a deep cutting and tunnels; the second year along a high embankment and over bridges. The railway is completed by making stations, signals and signal-boxes, telegraph poles and wires, and level crossings.

All this gives training in mathematical accuracy, and affords an opportunity for hand-work in lessons, as well as developing the powers of observation. I have found the train-girls much more observant on their daily journeys. Each year, also, the physical features are somewhat changed. For instance, last year, in order to facilitate communication between the river and the main tri channel was made connecting the two, and as they different levels this necessitated the construction o

All this work is, of course, mainly for the children; but every form in the school builds a dwelling-place of some kind during the summ This makes the girls read more books of travel, at pictures, in order to find out as much as poss the place they have chosen. The girls use their to construct the houses of material which will weather. One form chose Venice, and built a fi standing on the banks of some rather mud Another made a South African ostrich farm; a Europeans owned the farm, and lived in a li with a verandah, surrounded by the huts of servants who were in charge of the ostriche bullock wagon was to be seen fording the river.

Another represented an encampment in an o a pyramid and the Sphinx seen in the distan châlets were placed on the higher pastures, wit starting tions to tains. chose house temples, village, village maypole covered Dutch manufa town, village; second their ow Wakefiel made school the oth In fact, endless ingenuit the repr of other life t own.

This geography garden has helped the childr realisation of the meaning of physical terms a understanding of a map; it has trained them in and developed their powers of observation, and g opportunity for work in which the mind directs and lastly, it has given more interest in geogr has been a stimulus to read more books ab countries and books of travel.

A Nature Reader for Senior Students. Edit John Cockburn and E. E. Speight. 1–334 pp and Stoughton.) 2s. net.—This is an altogether production, and is one of the best results of the r of education to which the editors aptly refer in troduction. The whole book is real, and leads to literature itself. The only caution necessary i teacher should not read his delight in nature minds of his class: their delight is of another must be allowed to grow. The illustrations are known pictures.

E TEACHING OF ELEMENTARY ARITHMETIC.[1]

Recent Movements.

he report of a committee on the teaching of y mathematics was presented to the Belfast meet- British Association in 1902, decided changes have ce in the nature and purpose of mathematical in schools. The appointment of that committee outcome of a discussion on the teaching of y mathematics opened by Prof. J. Perry, F.R.S., sgow meeting of the Association in 1901; and the thus directed to the need for reform led to the of similar committees by representative bodies rs and others interested in the improvement of ical teaching. Reports in which the general pressed by the British Association Committee support were prepared by committees of the ical Association and the Incorporated Association nt-Masters. A syndicate appointed by the Uni- Cambridge in December, 1902, drew up schedules tions in demonstrative geometry and of construc- practical geometry suitable for the course of proposed; and the whole or parts of these have been adopted as the basis of requirements ry for the Previous Examination at Cambridge, ns at Oxford, and the Local Examinations con- th these two universities. Other examinations e been modified so as to found geometrical teach- experimental work with the use of instruments, rical measurements and calculations, are those of n Matriculation, Army and Navy Entrance, and Service; with the result that in most secondary ot only in this country, but also in India and es, the work in elementary geometry has altered ough it must be admitted that in actual practice s not gone far in the average school.

ent improvements in the character of school have been shared by other mathematical sub- h as arithmetic, algebra, and trigonometry, to tage of them all. It is recognised that the work e drawing and measuring, with numerical calcu- far better adapted to the intelligence of pupils , even when its practical value is left out of ion, than a rigid system of deductive geometry. chools, geometry and trigonometry have indeed their earlier stages largely arithmetical, while introduced as generalised arithmetic; and there round for the belief that this rational and co- treatment of school mathematics will be generally the course of a few years.

ws expressed by the committees of the British matical Associations as to desirable improvements ching of arithmetic are subjoined, and also the dations relating to this subject contained in a ntly presented by a committee of the Institution Engineers. From these extracts it will be seen that there is a consensus of opinion among men of science, mathematical masters, and engineers as to the fundamental importance of practical work, the need for simplification, the use of contracted methods and of logarithms in numerical calculations, and the omission of those parts of the subject which have no relation to the common experiences of life.

Recommendations of British Association Committee.[1]

In regard to arithmetic, the committee desire to point out, what has been pointed out so often before, that, if the decimal system of weights and measures were adopted in this country, a vast amount of what is now the subject-matter of teaching and of examination could be omitted as being then useless for any purpose. The economy in time, and the advantage in point of simplification, would be of the greatest importance. But such a change does not seem likely to be adopted at present; and the committee confine themselves to making certain suggestions affecting the present practice. They desire, however, to urge that teachers and examiners alike should deal with only those tables of weights and measures which are the simplest and of most frequent practical use.

In formal arithmetic, the elaborate manipulation of vulgar fractions should be avoided, both in teaching and in examinations; too many of the questions that appear in examination papers are tests rather of mechanical facility than of clear thinking or of knowledge. The ideas of ratio and proportion should be developed concurrently with the use of vulgar fractions. Decimals should be introduced at an early stage, soon after the notion of fractions has been grasped. Methods of calculation, accurate only to specified significant figures, and, in particular, the practice of contracted methods, should be encouraged. The use of tables of simple functions should be begun as soon as the student is capable of understanding the general nature of the functions tabulated; for example, the use of logarithms in numerical calculation may be begun as soon as the fundamental law of indices is known.

Recommendations of Mathematical Association Committee.[2]

(1) The committee consider that there is considerable danger of the true educational value of Arithmetic and Algebra being seriously impaired by reason of a tendency to sacrifice clear understanding to mere mechanical skill.

(2) In view of this the committee recommend:

(*a*) that *easy viva voce* examples should be frequently used in both Arithmetic and Algebra;

(*b*) that great stress should be laid on fundamental principles;

(*c*) that, as far as possible, the rules which a pupil uses should be generalisations from his own experience;

(*d*) that, whenever practicable, geometry should be employed to illustrate Arithmetic and Algebra, and in particular, that graphs should be used extensively;

(*e*) that many of the harder rules and heavier types of examples, which examinations alone compel us to retain in a school curriculum, should be postponed.

With these as guiding principles the committee are led to make the following suggestions:—

Arithmetic.

(3) That, as a preparation for contracted multiplication, pupils should, in multiplying, from the very first be taught to begin with the highest digit of the multiplier.

(4) That first principles should be carefully taught before vulgar fractions are begun, special stress being laid on factors with index notation and the use of the signs +, −, ×, ÷, and of brackets.

(5) That, as far as possible, prime factors should be used in finding H.C.F., L.C.M., and square and cube roots.

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[1] Report of a Committee of the British Association (Section L, Science), presented at the York meeting of the Association, The Report was drawn up by a sub-committee (secre- R. A. Gregory) of the following committee appointed "To the Course of Experimental, Observational, and Practical suitable for Elementary Schools": Sir Philip Magnus (chair- W. M. Heller (secretary), Sir W. de W. Abney, Mr. R. H. I. E. Armstrong, Miss A. J. Cooper, Miss L. J. Clarke, Mr. her, Prof. R. A. Gregory, Principal Griffiths, Mr. A. D. Hall, erbertson, Dr. C. W. Kimmins, Prof. J. Perry, Mrs. W. N. A. Smithells, Dr. Lloyd Snape, Principal Reichel, Mr. Hugh Mr. Harold Wager, Miss Edna Walter and Prof. W. W.

[1] Extract from the Report of a Committee of the British Association on the Teaching of Elementary Mathematics. (Report of the Belfast Meeting, 1902, p. 473.)

[2] Extract from the Report of a Committee of the Mathematical Association on the Teaching of Arithmetic and Algebra. (*Mathematical Gazette* July, 1902.)

(6) That much time should not be spent in teaching complicated vulgar fractions.

(7) That, in order to facilitate the teaching of decimals, a scale divided decimally (both in inches and centimetres) should be used for the actual measurement of lines; the scale should be subsequently used in the determination of areas and volumes.

(8) That in teaching decimals, concrete examples should be taken from the metric system.

(9) That approximate work with decimals should be introduced early and that recurring decimals should be treated in this way, the theory of recurring decimals being postponed to a later stage.

(10) That the rule for cube root should be omitted.

(11) That those parts only of the English tables of weights and measures which are in general use should be taught; and that long questions in reduction (*e.g.* square miles to square inches) should be avoided.

(12) That in money sums the system of decimalising money at sight should be largely used and that answers should, as a rule, not be required beyond the nearest penny.

(13) That, in pass examinations in Arithmetic, the use of algebraic symbols should not be prohibited.

(14) That rough checks should be constantly employed in arithmetical work.

(15) That in many cases a rough estimate might usefully *precede* the detailed work of an arithmetical computation.

(16) The committee consider that the mental training afforded by Arithmetic is largely impaired by the existing tendency of text-books to classify problems and to establish each type as a separate rule.

REPORT OF COMMITTEE OF INSTITUTION OF CIVIL ENGINEERS.

The Committee of the Institution of Civil Engineers issued a schedule of questions to 120 representatives of (*a*) teachers in engineering colleges; (*b*) headmasters in secondary schools at which it was believed special attention was paid to scientific training; and (*c*) engineers not engaged in teaching. The following questions were submitted in mathematics, and the percentage of replies in favour or against is shown for each.

Is it desirable that the teaching of Mathematics at School should be arranged with a view to attain all or any of the following objects?—

(1) The practical use of arithmetic with the special object of obtaining correct results independently of the mere study of arithmetical methods. (Yes, 81; No, 19.)

(2) The encouragement of the use of contracted methods. (Yes, 91; No, 9.)

(3) The encouragement of exercises in mental arithmetic. (Yes, 94; No, 6.)

(4) The teaching, at this stage, of what Prof. Perry has called "Practical Mathematics," of the use of Logarithms, of Elementary Trigonometry (limited, for example, to right-angled triangles), of the general ideas of Projective Geometry, including points and lines at infinity, and the use of the slide-rule. (Yes, 85; No, 10; Omit slide-rule, 5.)

(5) The elimination from instruction in Mathematics of such matters as Cube Root Extraction and elaborate Algebraic Equations, which are purely intellectual gymnastics without any direct usefulness. (Yes, 90; No, 10.)

The result of this inquiry led the Committee to make the following recommendations:—

Instruction in mathematics should be given by methods differing considerably from those usually adopted in the teaching of this subject merely as an intellectual exercise. The geometrical side of mathematics should be fostered, and before they leave school boys should be conversant with the use of logarithms, and with at least the elements of trigonometry, including the solution of triangles. It is also of importance that instruction in practical arithmetic should be carried further than has been generally the case hitherto, with the object especially of encouraging the use of contracted methods and operations in mental and of encouraging also the expression of result such a degree of (numerical) precision as is cons the known degree of certainty of the data on are or may be supposed to be based.[1]

VIEWS OF THE BOARD OF EDUCATION

Evidence is not wanting that some education ties and examining bodies desire to encourage t and practical methods of teaching arithmetic proposed in the foregoing extracts. The "Teachers" issued by the Commissioners fo Education in Ireland contain valuable hints on t teaching of arithmetic, and the Scotch Educati ment has adopted the new methods as the bas for the Leaving Certificate examination. The stance of this tendency is afforded by a (Cd. 2638, price 8*d.*) prepared by the Board of in 1905, and containing "Suggestions for the ation of Teachers and others concerned in th Public Elementary Schools." This publication chapter on the teaching of arithmetic and three schemes of work for the various years of prir instruction. In the first of these schemes, ad subtraction are applied to compound rules (mo multiplication and division are taught; in the the four simple rules are taught to begin with third scheme is based upon number as a means c ment, whole numbers being taken first, whil and decimal fractions are afterwards introduc cessive refinements of a precise system of me Though these schemes differ in detail as to t of approaching the elementary processes of arithi have all been designed with the object of givir clear ideas about number, a practical acquaint simple measurements, and confidence in the app arithmetical operations to problems of everyday l

A course of work conceived in the spirit of th gestions" would meet with the approval of most of reform in the teaching of arithmetic in schools. What is now required is that the pri scribed in the Blue-book should be raised from of pious opinion to that of actual practice. sufficient for the Board of Education or any exercising control over the work of elementary point out desirable methods of teaching arithm it is well known that in most schools no chan made until it is insisted upon as essential to effici

It is undesirable to give here a detailed syl school course in arithmetic but a useful purpo served by pointing out some existing defects and directions in which improvements are required enced teachers know the intellectual capacities and many of them follow methods of instruct leave little to be desired. In general, however, is not made a practical study but a miscellan cesses of doubtful origin and utility. To indica the furbelows which may be usefully discarde encourage the adoption of a more reasonable tr the subject is the chief object of this report.

FUNDAMENTAL PRINCIPLES.

So far as possible, all reasoning in arithmetic from the concrete to the abstract. Pupils shou drilled in applying rules they do not understand,

[1] Extract from the Report of a Committee of the Institu Engineers on the Education and Training of Engineers (April

e manipulation of objects, paper-folding, the
t of lines or consideration of other concrete
hat is meant by simple arithmetical processes,
led to arrive at generalisations expressing in
m what they have found to be true in the
i other words, the rules should represent
perience instead of being academic statements
or method in which arithmetical operations
rformed. Excessive precision in the manipula-
numbers, or rapidity of working, should not
d more important than the development of
wers encouraged by dealing with things instead

ice of teaching arithmetic as a collection of
r different headings from which a choice has
for the solution of any particular problem
too strongly condemned. Every teacher is
h the pupils who want to know whether they
iply or divide one number by another in a
in order to obtain the correct answer; when
things exists it is evident that the calculations
gless. When the first four rules are grasped
aning of a simple fraction is understood, as
f familiarity with the subdivisions of a penny
, decimals may be profitably introduced by
t; ratio then presents no difficulty, and pro-
nerely the equality of two ratios. No other
quired in simple arithmetic; in particular the
ree " should be avoided, as an obstacle to clear
d an offence against the common sense of a

Methods of Approach.

should be given to local value of digits at the
ent of the use of numbers as symbols. In
al value, use should be made of bundles of
in tens, pigeon-holes with separate compart-
ricks or other things representing units, tens,
ds, or separate rods upon which nine or ten
e placed, but no more. When the principle is
the expression of it by figures in different
uld be taught but not before. Subtraction can
t the same time as addition by treating it as
ary addition. In performing simple multipli-
s doubtful whether children at the beginning
taught to multiply first by the left-hand or
it of the multiplier instead of following the
d. The ordinary process appears to be simpler
hildren to understand, and it follows naturally
multiplication. Pupils who learn contracted
n will do so later when the change from
first by the right-hand digit to the left-hand
multiplier will present little difficulty.

uiring familiarity with the processes of short
vision, bright children may with advantage use
or compendious method of working long
which remainders only are written down,
found by complementary addition. The study
ulgar fractions should not be commenced until
been done with decimals; and there should
s involving fractions until clear ideas as to
ng have been obtained from concrete examples
ements. By the time children begin written
fractions, they should be so familiar with the
of inch and centimetre scales that rules for
, subtraction, multiplication, and division of
in be readily comprehended. With squared
d into tenths, it is easy to show graphically the products of such numbers as $2\times3\frac{1}{2}$ or $3\frac{2}{3}\times2\frac{1}{2}$; while by similar graphic exercises pupils will readily see the absurdity of adding mixed numbers by converting them into fractions, and understand that the product of two proper fractions is numerically less than either. The great advantage of work of this kind is that it enables the pupils to visualise simple principles.

Practical Work Essential.

Familiarity with the use of a rule divided into inches and tenths, or centimetres and millimetres, enables pupils to acquire a sound knowledge of decimals unconsciously; and at the same time they learn the significance of place value. Work of this kind can be introduced quite early without any difficulty. There is no need for any elaborate explanation of units and subdivisions if pupils are given sufficient opportunity for practical work with decimal scales and squared paper divided into tenths; while the difficulty as to the place of the decimal point in later calculations disappears, because clear ideas have been obtained of its meaning by numerous measurements. When percentages are reached, they may be usefully considered as decimal quantities as well as common fractions. It should be remembered that our monetary system admits of convenient decimal treatment; for, expressed as decimals of £1, we have 2*s.*=0·1; 1*s.*=0·05; 6*d.*=0·025; and 1*d.*=0·004 (or 0·0042). With a little practice, therefore, it is easy to decimalise money at sight.

Measurements of lines, areas and volumes may be introduced much earlier than usual. Sets of hard-wood models can be obtained at a low cost and should be put in the hands of the pupils to examine, measure and sketch, the measurements being expressed in decimals. By work of this kind arithmetic may be correlated with scale-drawing, geometry and the use of symbols in formulæ.

Concrete Experience should Precede Calculation.

Too much attention is usually devoted to currency calculations or money sums, while decimals, measuring and weighing, and work with realistic devices which teach the principles of arithmetic, are neglected. Children should not be troubled with any computations of this kind until they have fingered boxes of imitation coins and have clear ideas of the value of the tokens of commerce in buying and selling. When they are familiar with the relative values of coins and are able to answer simple questions orally, it is time enough to introduce work to be done on paper. If this plan is followed there will be fewer instances of children working sums involving amounts up to, say, £100, while they do not know what change to expect if they spend 3½*d.* out of 1*s.*

Tables of money, like tables of length, capacity or weight, should be based upon actual work and sense-observations, even if they have to be committed to memory afterward. A working knowledge of our common weights and measures may be thus obtained; and the many tables which cannot be dealt with in this way ought not to be considered in the work of elementary schools. Tables and sums relating to Troy Weight, 'Apothecaries' Weight, Dry or Corn Measure, and Apothecaries' Fluid Measure might therefore well be dispensed with and the time thus saved be given to work of which the pupil understands the significance. The cardinal principle in the teaching should be that the pupils are practically acquainted with all the weights and measures involved in their calculations, for without this knowledge or experience the work in arithmetic becomes merely a matter of mental gymnastics.

VALUE OF MENTAL EXERCISES.

In class-work there should be plenty of oral exercises and practice in mental arithmetic, in order to cultivate quickness and intelligence. It is a good plan to make pupils arrive at rough answers to problems mentally before working out a calculation in detail, for in this way they are less liable to be content with absurd answers. Until rough mental results can be arrived at, it is of little use to proceed with exact calculations. Moreover, in actual life approximate values quickly obtained from given numbers are constantly required.

CO-ORDINATION WITH EXPERIMENTAL WORK.

The co-ordination of arithmetic with any work in elementary experimental science carried on in schools is very desirable. Simple experiments in mechanics, physics and chemistry provide results that afford valuable practice in working with numbers to which pupils can attach definite meanings; and calculations of this kind have the advantage of giving confidence in the applications of arithmetic to problems of everyday life. The arithmetical work thus becomes part of a student's mental machinery, instead of being regarded as a set of disconnected rules leading to results which have no real meaning outside the classroom. In the upper classes, measurements and quantitative work in elementary science should provide a large part of the material for arithmetical exercises. The work may deal with such subjects as averages, strengths of mixtures, velocity, conversion of thermometer scales, approximation, specific gravities; many examples should be given of the application of graphical methods.

GRAPHS AND TABLES.

In working out arithmetical results of simple experimental work in science, and in solving problems, particular attention should be paid to (1) the limits of accuracy and (2) the shortest method of arriving at a correct result. Expressed in another way, pupils should understand the degree of approximation of the data supplied, and should employ the best tools available for working out a solution. Where squared paper provides the quickest or easiest means of getting a result of sufficient accuracy, it should be adopted; but there is little advantage in using this graphic method in cases where the computation can be done more satisfactorily by simple arithmetic. Frequent comparison of results obtained by graphs and by calculation will soon show the degree of approximation that can be reached on squared paper, and will indicate that in many problems graphic methods are the best to employ. It should also be remembered that, even though arithmetical operations may give a result more quickly than graphs, the advantage of the graphic method is that it provides an illustration of a principle or relationship which is more easily remembered than a set of numbers.

ARITHMETIC WITH TABLES.

Advantage should be taken of numerical tables such as are used by men in the office or workshop. Tables of shillings and pence as decimals of £1, tables of compound interest, squares, cubes, square root and cube root, reciprocals and other values in common use by practical men can be consulted as labour-saving devices. Tables of logarithms might also be used, as they are not so difficult to understand as much of the abstract work at present done in schools.

CO-ORDINATION WITH GEOMETRY AND ALG

Whatever geometry admits of arithmetical illustrations should be introduced where it is o if formal geometry and algebra are not taught ary schools, there is no reason why they sh used as linear and generalised arithmetic respe the circumstances of the school and staff ar This has been done in some schools, and fro that has been submitted to us it is evident tha been achieved.

Algebra as generalised or shorthand arith be introduced when the use of algebraic symbo ing relationships briefly or simplifying proble ciated. Pupils will soon learn to write algebrai of arithmetical rules or relationships, and whe stand clearly the nature of a formula, and th proportion as the equality of two ratios, th position to make intelligent use of the simple tables relating to mensuration, physics, ch engineering to be found in pocket-books used men. They will be far better employed in th of selected formulæ, using tabulated data from than in continually working at tiresome currency. In actual business boys are not concerned much with calculations involving count or other elaborate commercial calculat is much more desirable to give them a p sensible knowledge of the principles and tools than to drill them in the use of rules whi rarely have an opportunity of applying in their If a boy has been taught arithmetic by scient and not as a collection of artifices, he wil difficulty in responding to the demands mad when he leaves school, whether he enter the workshop.

The following recommendations may be c supplementary to those made by the British matical Associations, and reprinted earlier in t

RECOMMENDATIONS.

(1) It is essential that a knowledge of arith be based upon exercises involving the mani measurement of actual objects. At every st work performed by pupils individually should as of far greater importance than complexity o

(2) Great attention should be given to funda ciples, and any rules required should be g from work done by the pupils. No written should be required until pupils are able to or approximate answers to the sums set. F exercises are therefore necessary.

(3) Complicated calculations presenting pu difficulties should be avoided. There should simplification of the rules and exercises usuall school arithmetic, and more work with small illustrate arithmetical principles. Less attenti given to currency calculations and more to arithmetic experimentally in order that pupil by their own experience and acquire intellig dimensions by realistic work and measureme and sizes.

(4) Every pupil in an elementary school sh in the course of his work numerous practi with imitation coins, with inch scales common fractions and decimals, and scales o and millimetres, balance and common small metric and British, common measures of cap

npasses, dividers, protractor and squared paper.
hest Standards, logarithms and other labour-
hods of computation may be used where the
es of the staff permit these methods to be
with profit. Mechanical use of the "rule of
ould be avoided; and importance should be
giving clear ideas of ratio.
work in arithmetic should be co-ordinated with
nentary science, so that problems suggested by
teacher or results found in the laboratory may
rcises in computation in the class-room.
sting proficiency in arithmetic, an intelligent
of the operations and familiarity with practical
ld be considered at least as important as
ccuracy.
rtificial distinction should be recognised between
and algebra. Symbolic notation, the use of
titution of numerical values for symbols, trans-
terms, and the plotting and solution of a
ine equation" should form part of the arith-
gramme of the sixth and seventh Standards.
algebraic and graphic methods save time their
be encouraged.
ietry should be co-ordinated with arithmetic by
as measurements of lines, areas and volumes,
n and measurement of simple geometrical figures,
n and measurement of paper models, scale draw-
ie representation of variables by graphs.

TORY AND CURRENT EVENTS.

e recently received a pamphlet in which the
r. Burgess, of Columbia University, U.S.A.,
an alliance between Germany, Great Britain,
nited States of America. He argues that these
re allied ethnically as against the Romance and
les, and that their ethical standards (individual
l self-government, the nationality of the State,
etter than those of the Romanised States. He
certain minor hindrances to such a union, con-
inly of prejudices arising out of recent events,
these have passed or are passing away. He
if Great Britain and the United States allied
luding Germany, this Power would be forced to
Russia, and thus inaugurate an alliance of
ainst Anglo-Saxondom. The greater hindrances
ance he desires are, in his opinion, the United
iff and the position of Russia, which naturally
Germany and Austria. He therefore argues that
States should take the lead in proposing the
ecause she is in no fear of Russia, and should
abolishing her "protective" policy.

GESS's pamphlet is a reprint of an article pub-
the winter of 1903-4, and is already in many
t of date. He thinks, for example, that an
France with Great Britain is unlikely and
little did he foresee the *entente cordiale*. He
"Sweden-Norway," and now that has disap-
e thinks Russia strong, and did not anticipate
d he?) the anarchy and distress that now possess
ry. All this shows only how necessarily short-
e best of us are. But we also miss from Dr.
considerations matters that even ancient history
ply. Surely the mixture of blood in Europe is
than he states. Romanised as the "Romance"
peoples are, there are Teutonic elements in them all. Is not France the country of the Franks? Did not Goths and Lombards penetrate into Spain and Italy? And, on the other hand, is Prussia so entirely Teutonic? Whence comes the name of that kingdom? And Austria-Hungary by its very name is as much Magyar as Teutonic, not to speak of the other nations comprised in that composite monarchy. In history, as Bishop Stubbs said, all generalisations are *ipso facto* false.

THERE has been much talk this year of union among Christians. This is by no means new; the ideal of the unity of Christendom is as old as the religion itself. But what is new in some recent speeches is the recognition, to a larger extent than ever before, of the difference between unity and uniformity. Mr. Balfour, for instance, last June said, "We have to face the fact that the universal Church is divided into various ecclesiastical organisations." Note first the language used. What are "ecclesiastical organisations" if they are not Churches? Translate therefore thus: "The universal Church is divided into various Churches." Evidently the word "Church" is ambiguous. And then make a kind of genealogical tree showing the historical relations between the "various ecclesiastical organisations" into which Christendom is divided, dating the separations, East and West, Roman and Protestant, Lutheran and Calvinist, &c. Specially interesting would be such a planning out of Scottish Christianity and of Methodism. The whole would form a study like that of botany, with its species, sub-orders, and orders.

BUT what is most interesting to us as students of "history and current events" is the parallel which Mr. Balfour drew between lay and ecclesiastical history. As the original idea of the Church was unity, and as that unity has been shattered into endless fragments, so it has happened to Europe in its State organisation. To quote Mr. Balfour, "The theorists of the Middle Ages dreamed the dream of a universal Empire which should embrace all civilised mankind, but we have to face the fact that mankind is divided into various nations." The history of that dream is the subject, as we all know, of Dr. Bryce's "Holy Roman Empire," and forms the kernel of all European history even to the present day. The Roman Empire of Augustus and the Antonines, of Justinian and Heraclius, of Karl the Great and Otho III., of Charles IV. and of Charles VII., are but various forms of that ideal and its partial realisation. Virgil paints it for us in the "Aeneid," Dante in his Vision and his "De Monarchia." And it still lives on in international law and in Hague Conferences. But as idea only, not in fact.

Cumberland, Westmorland, and Furness. 128 pp. (Blackie.) 8*d*.—This little book—one of a series dealing with the English counties—is ostensibly a reader, but withal a useful pocket accompaniment for the young pedestrian. Its avowed aim is to quicken the interest of "the pupils" in their immediate surroundings, and to make school excursions interesting. To this end there are included, in addition to such chapters as one would expect on the history and geography of the counties, sections on the mines and quarries, the bird and animal life, and the distribution of plants. The whole is written in simple and easy-flowing language, and pictures and maps are inserted by way of illustration. The latter, by the way, are too small and indistinct to be of much value.

ITEMS OF INTEREST.

GENERAL.

THE Education Bill, 1906, has passed the committee stage. By the fall of the "guillotine" on July 18th, clause 36 was added to the Bill without debate. Should the Bill in its present form become an Act, the Teachers' Register will be abolished. We regret sincerely that this clause of the Bill was not discussed. The two or three members who understand the needs of secondary schools might have convinced the House of the need for a register. We recognise the shortcomings of the present register, and associate ourselves with the opinion expressed by "A Registered Teacher" in our issue of last month, that a single-column register on the lines suggested by him would serve a distinctly useful purpose in the direction of raising the status of the profession and securing public confidence.

IN reply to a question which Mr. Courtenay Warner put upon the question paper of the House of Commons in regard to the new grant under the Education Bill, Mr. Birrell has made the statement that the general principle upon which the Board of Education will proceed in the ultimate distribution of the new grant will be to have regard both (*a*) to the actual increase of local burden consequent upon the Bill, and (*b*) to the amount of the education burden in the area. The Government is of opinion that it is not possible to lay down any detailed scheme for the distribution of the grant until some trustworthy estimate can be formed of the probable additional burden accruing in individual areas through the operation of the Bill; and this cannot be obtained until some experience of the arrangements that are made under the Bill between local education authorities and the owners or the trustees of voluntary schools has been gathered. Taking the country as a whole, the sum named in the Bill will considerably more than cover the total liabilities that can reasonably be expected to accrue to the local authorities generally in respect of the new burden of the structural repairs of those voluntary schools which are taken over, and in respect of sums paid by way of rent on the taking over of those schools, or in the shape of new annual charges of sinking fund and interest for the erection of any new Council schools that may be erected in lieu of existing voluntary schools. It is clear that any scheme of distribution of Exchequer grant which is to have regard in some equitable manner to the total burden borne by a locality in respect of elementary education must involve some readjustment of the existing Exchequer grants.

FOR these reasons the Chancellor of the Exchequer has decided upon a comprehensive scheme of allocation of all State grants in aid of the local burden in respect of elementary education throughout England and Wales. An amalgamation of the existing grants for elementary education, which are now threefold, and are paid on various complicated bases and at different dates, is on other grounds eminently desirable; and the Board of Education has for some time past had it in contemplation to attempt some administrative reform, and also to reform the tangled scheme of "school years," delayed payments, and quarterly instalments, at present attaching to the grants generally. The Government is of opinion that the best mode of dealing with the matter is to prepare a scheme by which all existing grants for elementary education, together with the new grant of £1,000,000, shall be newly distributed, and that as such a scheme cannot be prepared until information is available as to the arrangements m ing transfers of schools under the Bill it sh the subject of a Bill to be introduced next yea

THE Education Committee of the London Co is suggesting to the Council a new scale of head and assistant masters and mistresses in ary schools. In schools planned for over 400, are to begin at £600 a year, and their sala crease by annual increments to £800. Headmi in similar schools, commence at £400, which increase yearly to £600. In schools plann 201 to 400 pupils, headmasters will begin at headmistresses at £300, and their salaries £600 and £450 respectively. In schools plar and less, the initial salary of a headmaster w and of a headmistress, £300, the maxima and £400 respectively. The commencing sal sistant masters appointed in the future to t secondary schools will be £150 a year, risin increments of £10, subject to satisfactory £300 a year, with a possibility of a further in allowed of £10 a year to £350 a year, in the Council may consider that the master i a position of special responsibility. And the salaries of assistant mistresses appointed in t the Council's secondary schools will be £120 a by annual increments of £10, subject to sati ports, to £220 a year, with a possibility of creases being allowed of £10 a year to £250

THE Country in Town Exhibition, held in chapel Art Gallery from July 5th to 19th, was b ing and encouraging to those struggling nature-study a living interest under the diff tions of town life. The plants grown from children in twenty-six public elementary school were very creditable, and in the London Cou exhibit the plants grown in the schools fr walnuts, and chestnuts, and the flowers, fruit, ables from the school gardens are a striking good work now being done. The numerous br (sometimes containing specimens of the caterpill and butterfly stages), the silkworms, snails, d and other pets, show that the children have living things to care for and to observe d The descriptions and illustrations of the sch sometimes lasting for a week, undertaken by th Road, Kentish Town Road, and other scho infinite possibilities to those able and willing expeditions to parts of the country where flora, and geology are all of interest. An e scriptive catalogue on sale was in itself full o to the teacher.

A FEATURE of the exhibition was the well- healthy aquaria; and the simple aerating appa by Miss Hall (Stepney Borough Museum) solve the chief difficulty in their care. The sup of the Royal park have drawn up lists of wil water fowl seen in or known to breed in Lo and also showed plants proved to grow well i atmosphere, thus solving a problem for the t attempts school gardens in a town. Among ma ing exhibits may be mentioned that of the G Day School Trust, which included growing trative of physiological processes; birds' sku the adaptation of the beak to the food; pho

British trees taken in summer and winter; and a ogical exhibit illustrating methods of fossilisation, s collected by the girls themselves from all parts d during their holidays. Some other noticeable ns were studies in galls, and accounts of th- ture walks of different forms (Ipswich Endowed glazed specimens showing the dispersal of fruits Hall); dragon-flies emerging from the pupa-case utting bees (Charterhouse), and two dozen fossils London streets (Mr. Roberts).

H a further generous gift from the founders of ing college for women secondary-school teachers, cil of the Church Education Corporation have bled to begin the erection of a new wing at Hall, Oxford, to accommodate thirty additional The building will be complete in November, oped that Mr. Birrell, the Minister of Education, part in the opening ceremony. Students may r the Oxford, the London, or the Cambridge diploma, and a new department for the training arten teachers has been recently added. Milham ool, in connection with Cherwell Hall, is also uilt by the Church Education Corporation to ate 225 pupils. A new modern school for girls advantages in the classic city of Oxford, and feature in the curriculum is made of the his- d literary associations afforded by the place. erine Dodd is organising both the training col- the school, with the help of an experienced and aff

nouncement has been made of the resignation illiam T. Harris, United States commissioner of at Washington, and of the nomination of his Prof. Elmer E. Brown, of the University of . Dr. Harris's retirement has been made pos- retiring allowance from the Carnegie Foundation dvancement of Teaching. This action was taken stees of the foundation under one of their rules mits of such action in the case of extraordinary ual service to education. Dr. Harris has been issioner of education since 1889, and has had, *ace*, a larger and more intimate connection with body of teachers than any other man. The im of this retiring allowance was an act of the ppreciation of his work, and places his name ead of the list of distinguished men who have uch retiring allowances from the Carnegie Foun-

ort of Dr. Hartmann on the work of the medical the Berlin schools shows that there were last enty-six doctors permanently engaged. Each had o pupils to supervise, forming 125 classes which ributed in seven or eight schools. An individual on of each child is made shortly after admission, alth card is filled up for those who are in any rmal. About 20 per cent. of new entrants receive d, so long as the cards are not withdrawn, the emain under supervision. About 10·4 per cent. tal primary-school population is on the special l. This gives 675 patients to each doctor, who about twenty-eight others from the weak-minded ers' classes. The principal reasons for issuing health card were:—Defects of sight, 22·4 per hearing, 11·2 per cent.; anæmia, 13 per cent.; ble, 5·3 per cent.; spinal trouble, 5·7 per cent. An encouraging feature of the work is the part taken in it by the teachers, who get acquainted with the parents of afflicted children and are able to ameliorate home conditions.

Much useful advice has been given by the doctors on the subjects of ventilation, illumination, and desk accommodation. It appears that dual desks are now the standard, that five different sizes are manufactured, and that each class-room must have at least two sizes of desks. The height of the seat varies from 31·5 cm. to 46 cm. The most interesting part of the report deals with the consumption of alcohol by school children. About 80 per cent. of the whole consume alcohol in some form or other, and those who take it most regularly show the largest proportion of unsatisfactory school reports. The scourge of tuberculosis heavily afflicts Berlin, where the mortality from this cause has increased, though in the rest of Prussia it has decreased. About twice as many girls as boys are victims. This being so, the value of outdoor exercise and of special breathing exercises is being more and more inculcated in the schools. For those already attacked special arrangements are often made, so that they can get a holiday at some country sanatorium. The Berlin school doctors confine their attention to supervision. They do not prescribe for, or treat, the individual child, but are always ready to suggest means of obtaining treatment. In this manner they do not interfere with domestic management, and thus secure the active support of parents, teachers, and their professional brethren.

As the outcome of a series of conferences held during the past two years, under the chairmanship of Prof. O. Elton and Prof. H. C. Wyld, at the University of Liverpool, a local society has just been formed to promote the study and teaching of English literature and language. It hopes to effect this aim in the most practical way possible, by direct intercourse between teachers on definite matters of interest that arise out of the teaching of the subject, but at the same time the new society will welcome co-operation with other English associations framed on similar lines and having similar objects, as well as with the existing local history and geography associations, to all of which many teachers will belong. Prof. Elton, to whose keenness and active interest the success of the conference was largely due, was elected the first president. All who are interested in the teaching and study of the subject are invited to join. Mr. G. R. Mitchell, of Liverpool College, is the honorary secretary of the new association.

In the *Monthly Record* of the League of the Empire, Prof. Bury gives the subjects for the Empire Day Competition, 1907, inter-secondary schools and inter-primary schools of the Empire. The prizes are two silver challenge cups presented by Lord Meath, and personal prizes of £5 5s. and £3 3s. respectively, given by the League of the Empire.

Mr. Douglas Smith, education secretary to the county council of the North Riding of Yorkshire, has been appointed headmaster of King's College School, Wimbledon.

Mr. J. E. Barton, the senior classical master at Bradford Grammar School, has been appointed headmaster of the Crypt School, Gloucester.

Mr. A. K. Watson, of Rugby School, has been appointed headmaster of Ipswich School, in succession to the Rev. P. E. Raynor.

THE Civil Service Commissioners announce that an examination for temporary boy clerks will be held, commencing on September 25th. The last day for receiving applications is August 30th. If so many candidates qualify, 250 appointments will be made; of these, which are worth 15s. a week, rising by 1s. a week annually to 19s., 230 are in England, Scotland, or Wales, and twenty in Dublin. The age limits are fifteen and seventeen, and the subjects are:—(1) Writing and orthography; (2) arithmetic; (3) copying MS.; (4) composition; and any two of the following:—(5) geography; (6) English history; (7) Latin; (8) French; (9) German; (10) mathematics; (11) chemistry and physics.

SCOTTISH.

THE debate on the Scottish estimates resolved itself into an education field day. No other subject was touched upon, and at the close the desire for further discussion was so strong that the Prime Minister had to promise another day for this purpose. The debate centred round two main topics—the new training regulations and superannuation. In regard to the former there was a distinct cleavage of opinion, one section strongly supporting the junior-student arrangements, and the other, and seemingly larger body, upholding the traditional pupil-teacher system. This difference of opinion finds expression in the new regulations, which provide meanwhile for the continuance of the two systems side by side, and on the front bench itself it was interesting to find the Secretary for Scotland championing the new system, while his colleague, the Lord Advocate, with much greater enthusiasm declared for the old. The retention of the two systems side by side may not seem a very heroic policy, but it is certainly a most sensible one, and if the new possesses the inherent superiority claimed for it by its supporters, it will soon drive the other from the field. If by any chance this proves a mistake, it will be easy to revert generally to the time-honoured system of pupil-teachership.

SUPERANNUATION found a place in practically every speech. The present scheme, it was contended, kept really able men and women out of the profession. No one can maintain that an average pension of £32 paid on reaching the age of sixty-five years is anything like adequate compensation for being deprived of the means of livelihood avowedly in the interests of the State. This was the burden of the whole debate, and from both sides of the House the Scottish Secretary was urged to bring in a Bill putting matters on a more satisfactory footing. But while the Secretary was as sympathetic personally as any of the other speakers, as Secretary for Scotland he gave scant encouragement to the proposal for immediate action. The Government's hands are full, and it cannot promise anything meanwhile, but——. This cold official reception, after the unanimous appeal from practically all the private members, has created an uneasy feeling that the Education Department is not as enthusiastic in supporting the amendment of the Act as it has been in pushing the new regulations for the training of teachers. Salvation in education is not born of codes and minutes, however admirable, but of the spirit and character of the men and women in the schools. The pension scheme does its best to secure that these will be of the poorest and meanest and narrowest, and the educational guardians do nothing, being joined to their idols—forms, and rules, and minutes. These are passed, and "all's right with the world."

THE papers set at the Leaving Certificate examinations this year have maintained the high standard of excellence that has characterised them during the past th years. In practically all the subjects the men of the pupils for whom the papers are intende fairly gauged, and the questions set deman knowledge but intelligence at every stage. T Grade English paper was perhaps the only on exception might be taken. It might suit ver honours candidates who had to take it as their but it was quite beyond the range of the ave grade pupil. The form that the paraphrase to tainly original, but to do justice to it one w the literary faculty of a Pater or an Arnold. so much was admirable, it is perhaps unfair t small blemishes. Certain it is that the exam a whole have secured, to an almost unheard of confidence of the whole teaching profession.

MR. GULLAND, M.P. for Dumfries Burghs, is gratulated on successfully piloting the Educat fective Children (Scotland) Bill into the saf Acts. This useful measure gives school board incur expenditure in conveying cripple childre defectives, between their homes and the school

THE Glasgow Provincial Committee for the Teachers has unanimously adopted the follow tion in regard to the superannuation scheme:- an adequate supply of fully qualified teachers of urgent national importance, and whereas superannuation scheme for Scottish teachers is discourage the entrance of suitable candida teaching profession, this Committee is strongly that there should be instituted forthwith a sch will secure for teachers, at the time of their retirement, allowances reasonably proportion salaries and commensurate with their servi State." The Committee, in forwarding this r the Secretary for Scotland and members of emphasises the view that the whole success regulations for teachers depends upon the qua teaching staff, and that nothing is more likel this being satisfactory than a reasonable pensic

THE report on the continuation classes for 1904–5 has just been issued. It is difficult to the delay in issuing these reports. If they are t service, they should be to hand before the ope following year's session It might be diffic the statistical part made up in time, but all suggestive and valuable parts of the report have appeared a year ago. It is pointed out th of the continuation classes is (i) to provide mentary instruction for young people who ha day school with an incomplete elementary educ sion I.); (ii) to afford opportunities for specialis tion to those whose elementary instruction m sidered complete, and who desire to study subj on the occupations in which they are enga prepare themselves for the more highly specia ing given in technical colleges (Division II secure for those who cannot attend a technical advanced and well-graduated course of training technical college might offer (Division III.); (iv the means of recreative or artistic training to are engaged under any of the above heads (Di A serious feature in the report is the decline in of the classes and in the attendance at each. of this decrease are dealt with by various ins the rural districts it is attributed partly to the of local managers and partly to the length of th

RENCE of representatives from the various school the south of Scotland was held recently in the ildings, Galashiels, to consider a proposal to ıtral technical institute for the Border District. sal emanated from the Galashiels Board, and it ated that if the scheme was approved the De- would be prepared to make a grant towards the ction. The meeting was generally in favour of scheme, but the difficulty will be to unite on ıt will approve itself to all parties, as local is a factor to be reckoned with all over the

ıe thirty-third annual report of the Accountant otch Education Department, it appears that the paid away in grants during the year was 8s., being £61,204 3s. in excess of the amount evious year. The total expenditure on educa- £3,099,884 3s. 7d., being an increase of 7s. 11d. on the past year. Of this amount 5 5s. 8d. was expended on teachers' salaries, increase of £97,265 1s. 1d. on the amount the last report.

IRISH.

ee and frank criticism on Irish education was Dr. Starkie in his evidence before the Com- which is inquiring into the working of the ıt of Agriculture and Technical Instruction. Dr. s more expert and official acquaintance with the ranches of education than anyone else in Ireland, ıry as resident Commissioner of National Educa- secondary as an Intermediate Commissioner, university as a former Fellow of Trinity and of Queen's College, Galway. When he says, that the state of educational affairs is thoroughly tory, his words cannot be regarded merely as a. Of the 8,500 primary schools, in 5,500 there e teacher, who has to teach a host of children age from three to fifteen. The girls' schools ely better than the boys' schools. There are, too many schools, due to an extraordinary policy gance on the part of the National Board thirty when, with a decreasing population, the number was increased by 2,000. Dr. Starkie was very the use made of the equivalent grant of 1902. d and Scotland the corresponding money has gone on, but in Ireland it has been sacrificed to the of politics, and devoted to the use of a Land purchase of steam dredges, the construction of and the like. Mr. Wyndham, to secure these berately told Parliament that it would be a waste to spend more on education in Ireland, and erefore go down to history as one who had ıe wheels of development of education there for ıs. For when he made this statement, by his n he had made it impossible to build new schools, condition of the existing schools was a scandal to n.

ARKIE was equally severe on the Government action the intermediate system. The Commissioners appoint inspectors, and the Government replied cost of the examinations—£2 per head—was too so money could not be afforded for supervision. missioners replied that inspection was intended ıy with examinations, and asked the Government in a Bill to that effect, but year after year goes by and nothing is done. A temporary expedient was adopted of a Consultative Committee representing primary and intermediate authorities, but the extraordinary thing was that the National Board and the Intermediate Board have only one representative apiece on it, while the Department, though its interest in primary and secondary education was far less, had three. And then this committee had only met five times in six years, and when it passed resolutions it could not compel the different authorities to carry them out. There could be no satisfactory co-ordination until there was only one educational authority, but unfortunately any proposed scheme would certainly meet with bitter opposition.

AN important contribution to educational discussion has been made by Father A. Murphy, in a paper read by him before the Maynooth Union on "Co-ordination in Education." Father Murphy's idea is that from infancy up to the age of eleven or twelve, the school work of any child is so elementary that it is quite possible to devise a programme for all pupils during that period, whatever their ultimate destination. At that age pupils who wished for a secondary education should leave the primary and enter the secondary school; while those who remained should continue in the primary school for two more years, and be divided into three classes: (1) those destined to become unskilled labourers, (2) those to be employed in trade or industries, and (3) those intended for some form of business shop, or counting house, or the public service. The two latter classes on leaving school should enter special schools adapted to their requirements. Liberal scholarships should be offered to enable promising children to enter secondary schools.

IMPORTANT changes are announced in the programme of the Royal University for next year. The most striking is the abolition of honours at the Matriculation examination. For the future this will be only a pass examination, and instead of exhibitions awarded on the result of it, there will be an entirely new scholarship scheme, by which scholarships will be awarded in classics, mathematics, modern languages, and experimental science. These will be of the value £40, £30, and £20, tenable for three years; and there will also be prizes of £20 and £10. The exhibition scheme at the M.B. degree examination is also considerably changed, and instead of exhibitions awarded on the whole course, there will be three exhibitions of 20 guineas each, awarded in special branches, viz., in the medical group, in the surgical group, and in the group of midwifery and obstetrics. A new Chancellor has at last been appointed—Lord Castletown—in succession to the Earl of Meath, who resigned in consequence of the disturbances at the giving of degrees last autumn.

THE Royal Commission on Trinity College has held its first meeting in London, and has decided on its course of procedure. It has determined, in the first place, to invite written statements from the Provost and Fellows of Trinity College, the professors of the University of Dublin, and other persons and bodies. The next meeting will be in London on August 31st. Meanwhile, persons wishing to lay their views before the Commission are requested to do so in writing, and to forward their statements to the Secretary, 4, Upper Merrion Street, Dublin.

LADIES have very early signalised their admission to Trinity College in competition on level terms with the men for scholarships. Miss O. C. Purser, a Senio

Fresh(wo)man, has won a classical scholarship on marks which in an ordinary year would have obtained for her first place, and was only beaten by a male candidate whose total was the highest since the year of Prof. Bury.

WELSH.

IT is reported that during the last year, in the Cardiff district, the lecturer on temperance has delivered 194 lectures to 18,149 scholars and 549 teachers in connection with elementary schools, in accordance with the recommendations of the Board of Education.

IN the Gowerton Schools, Pontardulais Council School (boys) has occupied the highest position for a year and a half in the matter of attendances. In April, May, and June it has held the highest position in the council schools of the county, with an average attendance of 98·3. The interesting point about this result is that the school is not a town school, a considerable number of the children living even two or three miles away.

THE salary offered by the Governors in the advertisement for a headmaster for the Monmouth Grammar School has been the subject of adverse criticism by the Monmouthshire education authority. The giving of a grant of £500 to the school by the local authority naturally carries with it effective right of criticism. The total emoluments of the headmaster in the terms of the advertisement would be £1,100. It was urged that such a sum was disproportionate to the salaries given to the assistant-masters. It was stated that the last headmaster had a double first-class. To this it was replied that one member knew a man with a "double first" only receiving £120 a year. Eventually it was resolved that the Governors of the school be asked to reconsider the whole position. One member of the local authority stated that the school was a charity school, and he hoped they were not going to "bring it down to the level of an ordinary secondary school."

THE Welsh Congregational Union at its recent meeting at Blaenau Festiniog discussed the question of education in Wales. It was urged that the history and language of Wales must obtain a more prominent place in the curricula of the schools and the colleges. It was described as a "strange anomaly that the Welsh parts of Wales were more remiss than the Anglicised parts in this respect," so far as elementary schools were concerned. Of the intermediate schools, forty-two gave no place whatever to Welsh, and of the 10,000 scholars in all the schools only 2,000 obtained any tuition in the subject, and of these, again, only 500 were presented for examination.

MR. MOSELY has now a splendid scheme for a commission of teachers, to the number of 600, from the United Kingdom to visit the United States. A committee has been appointed to deal with the arrangements, so far as Welsh teachers are concerned. Applicants must be engaged in the teaching profession. When applicants have obtained leave of absence from the education authorities their names will be added to a list which will be considered by a committee especially appointed to select those who are to make the trip. The generous offer of the steamship companies applies only to the months of November, December, January, February, and March. Anything from four to ten weeks may be required for the entire journey. The cost of the passage will be £5 return, including comfortable cabin accommodation, victualling (except stimulants), and use of bed and table linen on board, but not stewards' fees (5*s*. to 10*s*.). Railway travelling in the States and Canada is at th penny a mile, and accommodation can be boarding-houses from about 6*s*. 3*d*. per hea Applicants should state what sum they are spend, and their quarters will be arranged fc may be mentioned in describing this project number of years a Gilchrist scholarship has b the University of Wales, open to graduates, special inquiry abroad.

AT the Aberdare County Intermediate Scho tion is being raised of converting the dual separate schools for boys and girls. A lett sent from the County Council asking the G the school to look out for a suitable site to school for girls, and to leave the present sc for the boys. The Governors, on receiving keenly criticised the county decision. The ch that such a change would convert Aberdare in rate school. The constitution of other county higher elementary schools stopped the influx of the separate schools for boys and girls co small. It was decided to try to convene a jc of the Governors of all the county schools a the view of protesting against the proposed alt

RECENT SCHOOL-BOOKS APPARATUS.

Modern Languages.

Dictionary of Quotations (German). By vi.+485 pp. (Sonnenschein.) 7*s*. 6*d*.—This book of reference, which might have been mu if someone with a really scholarly knowledge as well as English had read the proofs, or, the MS. before it went to the printers. The misprints is painfully large, and the renderin cases are unfaithful to the letter, and still m the spirit of the original. This is in part mistaken idea that verse should (in a book c be rendered in verse. Compare the impress Grillparzer:

> Willst du mit den Kinderhänden
> In des Schicksals Speichen greifen?
> Seines Donnerwagens Lauf
> Hält kein sterblich Wesen auf,

with Mr. Walter Sichel's rendering:

> Vainly little hands like children
> Round the wheels of Fate we play:
> Fate, whose chariot ploughs the thur
> Brooks no puny child of clay.

Mirza-Schaffy's dainty

> Ein graues Auge—ein schlaues Auge;
> Auf schelmische Launen—deuten die bra

becomes in Miss E. d'Esterre's rendering:

> Deep and sly — The brown, less
> Beware the eye — Merry and mocki
> Of greyish dye! — Also pass by!

Would not simple prose be better than this cation?

F. von Zobeltitz, Der Backfischkasten. E Hein. iv.+139 pp. (Arnold.) 2*s*.—We do n coming across an edition of a foreign text as

d as this. The original story may have done
as a railway novel; here we have only a
hich does *not* "form a continuous whole."
cters appear in the most bewildering fashion;
y played a part in the sections omitted. What
tained of the story deals almost entirely with
nishing school." That the book will appeal to
he editor does not pretend; and we can assure
acquaintance with "British schoolgirls" does
him in his belief that "the fun and humour
t appeal" to them. The fun is largely horse-
humour commonplace. The language is very
acquisition of it may "greatly help to increase
vocabulary," but in an undesirable direction.
to learn "sich mopsen, scheusslich, schnuppe,
benelement"? The notes do not rise above
level. The German-English vocabulary is not
te. Altogether a book we cannot recommend

m Grimm. Edited by A. R. Hope Moncrieff.
lackie.) 1s. 6d.—We have here twelve fairy-
he famous collection of the Brothers Grimm.
not altogether satisfactory, but the illustrations
ratton are for the most part good. The notes
ly of renderings which are often too literal
ste. There are not many misprints. The
is practically complete. On the whole, an
commended.

Müller, Deutsche Liebe. Edited by J. C.
xx.+185 pp. (Ginn.) 2s.—Max Müller's
always exert its subtle charm on the cultured
an who takes it up, but it is no tale for the
The editor might therefore have spared himself
f compiling the vocabulary (which is good) and
any of the notes. The private student will only
by finding the editor asking him questions
or sending him to the classical dictionary for
of "Lethe," or telling him that a *Groschen*
in in use in Germany (where?), or asking him
parts of speech *der* represents, or assuring
oethe's *Über allen Gipfeln ist Ruh* is "not
metrical form."

rman Course for Science Students. By Prof.
er and F. E. Sandbach. 99 pp. (Morning.)
the student of either chemistry or physics
dvanced work some knowledge of German is
rder that the original literature on the subject
ulted. Since the London University has made
French and German compulsory for the B.Sc.
many students who have not learnt German
turning their attention to this subject; the
otice is intended primarily to meet the require-
ch students. The book is divided into two
rlier contains a number of passages for trans-
the latter gives a short outline of grammar.
forms a connected piece of simple technical
alternately from the provinces of chemistry
so that as many technical terms as possible
d to the reader. The grammatical portion
y much condensed, perhaps too much so for
preciation of the language. The rules are as
sible illustrated by words likely to occur in
rature; a short vocabulary is added, which
consists of words frequently made use of in
ers. The book is printed in Latin characters throughout, following the custom now adopted in nearly all German scientific publications. This certainly greatly lessens the labour of the beginner but will restrict his reading to such literature. From the point of view of the student anxious to understand scientific literature with a minimum of trouble the book should be of considerable value; we would not, however, recommend it for use in other circumstances, particularly for school use, especially as the style of the German is very second-rate compared with that of the usual school readers. A useful feature are the illustrations, which enable the student to visualise very rapidly the English meaning of the German words without referring to the vocabulary.

Classics.

M. Tulli Ciceronis pro Sexto Roscio Amerino Oratio. Edited by J. C. Nicol. xxxii.+150 pp. (Cambridge University Press.) 2s. 6d.—The introduction to this book is excellent; we would specially mention the numerous quotations from the text which are given in footnotes to this introduction. The notes are sound and scholarly, but as usual are of mixed kinds. Thus we have references to Nägelsbach and German quotations (untranslated), notes on antiquities, and other matters which appeal to a somewhat advanced knowledge, cheek by jowl with explanations of the historic infinitive, translations of *nihil est quod . . .*, *huc accedit quod . . .*, and other more simple phrases and words, including the numerals (p. 62), all too elementary for such a book as the first notes imply. The note on *spero* (p. 63) is misleading. It runs: "The rule that *spero* takes fut. infinitive in the object clause is by no means invariable in classical Latin. *Possum* of course has no fut. inf." In this case, *posse* may equally well represent *possum* in Or. Recta; and in cases where *spero* actually refers to present time, of course the present alone is possible. But, whether or no, a little more should have been said, or nothing, if the reader, observing an exception, is to be taught how to understand its reason. Mr. Nicol has read Plautus, and he points out elsewhere the colloquial style of this speech in parts. A more serious matter still is the ignoring of Plautus in the note on the jussive subjunctive (p. 100). We have the jussive present in classical phrases like *velim facias*; and there is no reason in principle for the restriction asserted, which, in fact, does not exist if Latin be studied as a whole. As regards *societas coitur* (p. 73), the noun has a cognate sense, which we think makes it unlikely that *coire* is transitive here. We offer Mr. Nicol a rendering for *ire debui* to fill the gap which he speaks of on p. 61: "I was bound to go." On the whole this is a useful little book, and practical; and we must congratulate the Pitt Press on the enormous improvement in type and the arrangement of the page. Their new school-books are a delight to the eye; the old ones, as their larger volumes still are, hideous.

Scriptorum Classicum Bibliotheca Oxoniensis. Tibulli aliorumque libri tres. By J. P. Postgate. 1s. 6d. paper, 2s. cloth.—We offer a hearty welcome to the new volume of the Oxford Bibliotheca. Dr. Postgate is a high authority on the criticism of Latin poets, and he has made Propertius and Tibullus specially his own. We are glad, it must be admitted, that there is less room in Tibullus for the rearrangement which in Propertius seems to have been a little overdone; this is a sound piece of work, and the introduction is a valuable account of the MS. evidence. The text is based on four MSS.: the Ambrosianus, Vaticanus (3270), Guelferbytanus, and Cinacianus, with occasional references to some of the many inferior MSS.

Matriculation Latin Construing Book. By A. E. Watt and B. J. Hayes. viii.+136+70 pp. (University Tutorial Series.) 2*s.*—We have on another occasion spoken in praise of Mr. Hayes's *Latin Grammar*, and we can commend also this new book. It consists of a brief Latin syntax, each section being followed by exercises; a collection of most of the pieces set as unseen in the London Matriculation; and a dictionary. The earlier part is very clearly put, and eminently practical. As an instance of the authors' intelligence and independence, let us quote § 45:—"Direct questions in which the verb is in the subjunctive expect as answer a command or statement of obligation." This is much better than the usual talk about "deliberative"; and one step further towards principles would lead to the grouping of both question and answer, along with the "indignant" use, under jussive subjunctive; which is one, whether it be put as question, as affirmation, as command, or as prohibition. There is an omission in § 56; it should be added that reports may be made by one of the original speakers, in which case the pronouns will not be third person. An explanation of the origin of *quin* (p. 62) would clear up the puzzle of its several uses, so strangely different at first sight. The rules for construing are good; but we must protest against the authors' English in one place at least (p. 77), where they give "adopted a circuitous route" as "more natural English" than "led them round by a longer route"! When we come to the second part, we see that this excellent introduction has been leading up, not to the understanding of a text, but to the cramming of snippets. We very much fear that those who use the book will leave their Latin without having read one complete book; but we must not lay all the blame on our editors—that is due to those who spoilt the London Matriculation, and are thereby doing great harm to classical education.

Latin Passages for Unseen Translation. Third Edition. By A. M. Cook and E. C. Marchant. ii.+128 pp. (Methuen.) 1*s.* 6*d.*—There is no need for a detailed examination of this, the Latin half of the editors' well-known book, *Passages for Unseen Translation.* We may, however, call attention to a number of unhackneyed pieces from Ausonius, Florus, Cato, the inscriptions; even from Sir Thomas More, Erasmus, Milton, and Richard Bentley.

New Classical Library. Edited by Dr. Emil Reich. *The Theaetetus and Philebus* of Plato. Translated and explained by H. F. Carlill. xxv. + 202 pp.

Plutarch's Lives of Alexander, Pericles, Caius Caesar, and Aemilius Paulus. Translated by W. R. Frazer. 263 pp.

The Annals of Tacitus. I.-VI. Translated by A. V. Symonds. xiii.+295 pp.

(Swan Sonnenschein.) 3*s.* 6*d.* each cloth, 4*s.* 6*d.* leather.

Mr. Carlill is more than a mere translator; he has views on Plato's philosophy, and has evidently made a thorough study of his works. He is a follower of Dr. Jackson in his opinion of Plato's theory of ideas; the common-sense opinion that Plato's mind grew and developed, and that what he thought of the ideas at first was not what he thought last. Mr. Carlill regards the *Theaetetus* as the central point of Plato's work; he also believes it to be a revision of an earlier dialogue. This he attempts to show by assuming that the original was a piece of perfect formal symmetry, which was in the revision formally marred by the addition of two or three sections "considerably superior in matter and considerably inferior in form to the rest of the work, . . . inserted with a perceptible disregard of the unity of the whole." We are not quite convinced by his reasoning, not least because we do not s hood of such exact symmetry (in the counting he assumes for the original draft; but there is discuss the matter here. We must refer re introduction and notes for Mr. Carlill's justifi translation is good, and readers of this diffi will certainly find the book useful. To the added an "Essay on the Theory of Form" in and its place in science. Mr. Carlill holds tha of Form is not an excrescence on the Platoni but "the theory of Ideas itself in its objective

We need not linger over the other two *Plutarch* is an unpretending piece of transla in sober English, and a creditable perfor *Tacitus,* like all translations, suffers by a com the original; compared with the Roman's fo it is wordy and diffuse. But he is a bold ma translate Tacitus. Both books may be read wi some pleasure by readers who are ignorant Greek.

The series is well printed, and the volum handy; they deserve a nicer binding.

English.

The Essentials of Composition and Rhetoric Espenshade. vii.+387 pp. (Heath.) 3*s.* 6*d.*— is welcome, and deserves careful study. N has been published at all recently. Rhetoric, ject is understood in America, gets but scanty this country, and even composition as an slowly. The book is the outcome of several y tical experience, and displays an intimate with all the bearings of the subject; but it that only the strictly teachable parts of the cussed are treated here. The book does not impossible. Absolute grace of style it still le inborn faculty which no text-book can ever be is no novelty in this volume, but as a practic of plain truths generally agreed upon, and as interesting treatment of an important subject commended.

Shelley's Prometheus Unbound. A Study. millan Brown. 187 pp. (Whitcombe and T There is much that is useful in this little vo evidently is the result of careful study and mu Many valuable suggestions are made in it, chapter is exceptionally well worth attentio who aims at literary criticism should himself beyond reproach; hence the ambiguity whic opening sentences on p. 50, and the uncertain be found on p. 122, have struck us unple feel compelled to take exception to "mutuali tudes," "moraller," "proverbialised," and as words forming any part of real English lit the phrases "will assimilate to," "disanimall "close echoes of the Crucifixion," and " kaleidoscope over" have puzzled us greatly.

Macaulay's Third Chapter. 128 pp. *The Antonines.* 104 pp. *Bunyan's Pilgrim's Prog* 125 pp. Part II. 128 pp. *Burke's Speeches* 127 pp. (Blackie.) 6*d.* each.—The titles o booklets show how capitally Dr. Rouse is s his aim of providing for junior and middle reading-books which are quite out of the ord such publications. From the first we have say nothing but praise of these little read selection at present under notice is every whi all that has gone before.

s from the Writings of Benjamin Franklin. By ılter. xviii.+366 pp. (Harrap.) 1*s.* 6*d.* net.— e number of pages, this little edition will almost small coat-pocket. It is neat and carefully got y way, and reflects credit on its compiler and anklin's autobiography would not make a good t unless it were Bowdlerised; but comparatively are acquainted with his prose work outside rtal volume. So here we have extracts from hard's Almanac," from Franklin's Essays and s, a considerable number of his personal letters, appendix an interesting feature is included in of Franklin's examination in the House of in 1766. There are some useful notes and a duction, and we think that from every point of ook is worth its price.

Speeches on America. By A. D. Innes. o pp. (Cambridge University Press.) 3*s.*— cellent in every respect. The amount of work been put into the introduction is very great, t has been so skilfully condensed that it occupies ely little space, and the notes are a still further f painstaking care. The sketch of Burke's life ne, and the historical survey of Great Britain's vith her American colonies leaves little to be nsidering the size and scope of this edition. We ommend it.

s Barnaby Rudge. By A. A. Barter. xxiv.+ (Black.) 2*s.* 6*d.*—This volume follows the n of the now familiar series which has already e novels of Dickens and Thackeray to those of eading-books for school use. The editorial work lone with care and success, and the inclusion of work from Dickens's pen in this series is in commendable.

of English Literature. By H. E. Evans. Relfe.) 1*s.* 6*d.*—This little work is designed for examination use, and its scheme certainly arefully worked out. It condenses into a small pages a sketch of the history of English litera- for the most part it follows the plan of giving tisfactory account of each of the really significant s to English letters. The sources of the work iter, and the influences which moulded him, are in the same brief but direct fashion, and the nt of this kind of matter which the author has enders it easy to memorise it. The analecta, al table, historical appendix, and index are and the book ought to serve, not only as an n manual, but as a serviceable introduction to s of English literary criticism.

History

Survey of European History. By A. Hassall. p. (Blackie.) 4*s.* 6*d.*—The range of this book e coronation of Charles the Great to the present there is also a slight sketch of events from . There are four coloured maps and nine others; n index, and there are also short bibliographies hapter, consisting of secondary books, and we rom the impression that Hassall's "Handbook an History Chronologically Arranged" is the rally useful authority. The author has un- included all the main facts of his story, and nostly correct, but until he reaches the Reform- d there is a strange confusion in the order of the telling. The consequence is much repetition (and even inconsistencies), and a feeling that we are never getting on with the story. In spite, too, of the promise in the preface that "special attention is given to the causes and results of the great movements in History," Mr. Hassall seems never to get far below the surface. There are often too many facts crowded together, and not sufficient breathing space to think of the why and the how. Often, in his hurry, Mr. Hassall mentions casually events and persons without stopping to explain them. The author is also too fond of emphasis, and he abounds in strong epithets. "Enormous," "startling," "marvellous," "important," "remarkable," "profound," and especially "immense," are scattered over the pages until they lose all meaning. Several alliances, "triple" and "quadruple," are "the famous." We are always "marking epochs" and passing through "ages of consolidation" or "of growing nationality." The book will be useful for those who have time and patience to analyse it, and for those who have a teacher at hand to explain many points; but we still look for a book of this size which will tell the English reader the story of Europe.

On the Spanish Main. By J. Masefield. xii.+344 pp. (Methuen.) 10*s.* 6*d.* net.—The sub-title describes this book as an account of "some English forays on the Isthmus of Darien with a description of the Buccaneers and a short account of old-time ships and sailors." It should be in every school library. There is no general introduction, but there is an account of the authorities given at the end of the chapters. There are twenty-two illustrations, reproductions of old pictures or maps. The narrative embraces the doings of Drake, Oxenham, Morgan, Dampier, and descriptions of the lives of the buccaneers in the sixteenth and seventeenth century struggles for the possession of tropical America. There have been recently many books published which should take the place of the novels of the last generation. This is one of them, and we think it would be better reading for our boys than even Kingsley's "Westward Ho!" It is just as exciting, and has the advantage that the reader knows he is getting history, whereas the novelist is not bound to guarantee all his presentations.

War and Reform, 1789–1837. By A. Hassall. xx.+ 304 pp. (Rivingtons.) 3*s.*—This is to be the last of a series announced under the title of Rivingtons' "Text-books of English History." It is the second to be published; the first, on the Tudor dynasty, was reviewed by us some months ago. Mr. Hassall has had the assistance of Mr. C. T. Knaus, of Bradford, and the consequence is that the book is more readable, better adapted to school children, than its companion volume. In six chapters we have the story of the war with France and that of parliamentary reform, told clearly and accurately. There are also a chapter on literature, a synopsis of principal events arranged in columns, a list of important dates in British colonial history, and of events in India. There are also some half a dozen small maps and an index.

Stories from Scottish History. Selected by M. Edgar. xvii.+238 pp. (Harrap.) 1*s.* 6*d.*—These stories have been taken entirely from Sir Walter Scott's "Tales of a Grandfather," and whatever objection we might raise against this treatment of a child's classic is met, and we are bound to say met fairly well, in the preface. Certainly it is better that these stories should be read than that Scott should be quite ignored, and it is the editor's wish that he should be read in his entirety. There are a short

introduction, sixteen good pictures, and a two-page chronological table. The selections end with 1603.

Outlines of English History. By H. Ince and J. Gilbert. viii.+157 pp. (Clive.) 1s. 6d.—A new edition of our old friend "Ince and Gilbert," brought up to date and even the rhyming summary largely rewritten. If there are any who can still teach English history from this old and curiously arranged book, they had better get this edition, which has been revised and, so far as it is possible, corrected in the light of modern research.

Cromwell. The Campaigns of Edge Hill, Marston Moor, Naseby, and of 1648 in the North of England. By Captain P. A. Charrier. 22 pp. (Relfe.) 6s. net.—This is a book written by a soldier for soldiers, the scope of which is sufficiently indicated by its title and its number of pages. The most valuable feature is a series of twenty-three plans, printed on separate sheets of paper, which are accommodated in a pocket at the end of the book. These should prove useful for teachers who wish to interest their pupils in the details of military matters.

A School History of Warwickshire. By B. C. A. Windle. xiv.+222 pp. (Methuen.) 1s. 6d.—Dr. Windle has only just left Warwickshire to preside over Queen's College, Cork. He is an F.R.S. and F.S.A., and if these titles had not been on the title-page we should have guessed at least the latter from the pages of this book. It is an excellent little manual of Warwickshire antiquities, and would be useful for village and larger libraries, but it is scarcely a "school history." Surely our pupils, even Warwickshire ones, would be wearied with the antiquarian details as to families and ruined buildings over which Dr. Windle is so enthusiastic, and about which he evidently knows so much. The temptation was great with Coventry, Warwick, and Stratford as texts, but Dr. Windle should have thought of his audience. He is evidently fonder of mediæval Warwickshire than of modern developments therein, for though he gives us a good account of Birmingham and its manufactures, he sighs for the quiet times, "free from the modern pests of rush, dust, noise, and smell."

Geography.

Wall Map of Palestine. Stanford's new Orographical Series. 16s. coloured sheets, 20s. mounted on rollers. Size, 52 in.×62 in.; scale, 4 miles to the inch.—This is the newest of the well-known series of orographical wall maps now being compiled under the direction of Mr. H. J. Mackinder. Europe and Africa have already appeared; Asia and North America are promised shortly. The general scheme has as its chief features the colouring of the different land-elevations in varying tints of brown, and the employment of grey, almost transparent, lettering, so as to allow of the insertion of numerous names without spoiling the graphic effect of the colouring. Both features are eminently good; the contour lines, drawn every 500 ft. for the lower and every 1,000 ft. for the higher levels, bring out the orography of Palestine most distinctly, while the grey names, numerous enough for all practical purposes, enable the teacher to use the map as a test-map if he wishes. A rather lavish display of different types of printing for Old Testament and New Testament, and for classical and modern names, is perhaps a little disconcerting, if not actually confusing, at times. Much care has been expended on the work. The surveys of the Palestine Exploration Fund are the chief sources which have been drawn upon—a fact which, combined with the director's name, is sufficient guarantee for accuracy. Of side Palestine proper precise data fail, and the in a printed statement expressly guard themsel possible criticism in this quarter; as, howev would buy the map for this region, the possibl from strict accuracy here may be disregarded. feature of Palestine, the Jordan depression, is shown, as it need be, when one remembe bottom of the Dead Sea is nearly half a mil surface-level of the Mediterranean, or that J its tropical palms, lies some 10,000 ft. b Hermon, with its everlasting snow-cap. A poi and one that is very seldom shown—is that is plainly drawn between the typical Wadis of ranean region and the streams which are all the year round. Finally, it is hardly nece that the map is right up to date; a reference way extension, which may be said to take I a base, will confirm this, no unimportant poi of latter-day Palestine, when proposals are motor-boats on the Sea of Galilee to T Capernaum in connection with the Mecca line

Stanford's Handy Atlas of Modern Geograp Edition. (Stanford.) 10s. 6d.—This atlas cor maps taken from Stanford's Quarto Atlas, b up to date, an important point in a "handy" test it we looked for the new Alberta and S of Canada, the East Bengal and Assam of effects of the Treaty of Portland on the politica of Japan, and the results of the boundary d between Brazil and Bolivia in the Acre te between England and Portugal in what used Barotseland. The maps stood the test excellent rest, the work is well adapted to its obvious a ready reference, say, for the morning new such it is, of course, not likely to be of m class-teaching purposes. It is crammed full European Russia appears more thickly thr towns than Holland—and there is, besides, index of some 100 pages, enabling the read positions whether the names be engraved or no

Philip's Model Atlas. (Philip.) 6d.—The c of this small atlas is its relief maps, one of nearly every political map. They are very printed, without names, in blue and photogra and in the hands of good teachers should l Altogether the book contains eighteen relief m political maps, and eleven diagrams. The occasionally a little defective, but, generally s whole work is very creditable, and, for the m lent. We note that the publishers have wisely British Isles, or some portion of them, as a s in the corners of the maps. We commend t junior forms.

Pitman's New Era Geography Reader. O Heritage. 240 pp.; illustrated; maps. (Pitm —This book, dealing with the British Empir a series designed to "correlate geography lessons." Each colony has its history sketche liminary to the account of its geography. T or develop patriotism, the several national given. The numerous pictures are quite go letterpress interesting, so that those teacher "readers" for their geography will not go f trying the book. Its least satisfactory fea "handbook" at the end.

rs's Twentieth Century Geography Readers. .) Book I. *Little Folks at Home and Abroad.* k II. *Life in Our Own and Other Lands.* 1s.— es speak for themselves. The books introduce ıtary facts of geography in the guise of a short rather series of episodes, in which the *dramatis* ıre the usual Tom and Lucy, or Alice and Jack, rs after knowledge, with Uncle Jim and Captain thers as purveyors thereof. Ex pede Herculem :— another forest,' said Jim, as they came to more o,' said his father, 'this is a wood. There are h trees here to call it a forest.'" There are illustrations, coloured as well as plain, and the ɔmpleted in eight books.

Mathematics.

al of Geometry. By W. D. Eggar. xxiii.+ Macmillan.) 3s. 6d.—In this manual the subject to a large extent on the lines of the *Practical in Geometry* by the same author, but formal : more prominently, and much additional matter l. It is stated in the preface that the book ground necessary for various examinations, and osed to infer from the reference to Euclid as a subject that a course such as that laid down in l may be considered sufficient for the school of geometry. We sincerely hope that we are n this inference, but in any case we think it unfortunate if school geometry were confined limits of the manual. The practical geometry , and the numerous illustrations that lead up gest the leading theorems are both instructive ting; but we think that much more might be, be, done to cultivate the feeling for geometry from geometrical drawing. A course of drawhed too far, may be just as fatal to a pupil's s any course of Euclid, and, except under the f the best teachers, tends to become purely It seems very strange that in a book so h the practical spirit as the manual before us e has been made of the principle of symmetry, ntral. No doubt, from the standpoint of ex- the use of this principle introduces, or is supıtroduce, certain difficulties; but the principle fruitful and so simple that it should occupy a e in elementary instruction. We feel grateful ıor of this manual for a presentation of the le of geometry that should be of great service but we must also state that, as a manual of ıs distinct from geometrical drawing, it does commend itself to us.

Arithmetic. By Charles Pendlebury, assisted Robinson. xii.+204 pp. (Bell.) 1s. 6d. (with-s).—This book is intended for the middle and s of secondary schools, and differs to a conxtent from the earlier book of a similar hiefly in the effort to meet the recommendations mittee of the Mathematical Association. The hod of treatment seems to be similar to that the other works on arithmetic that bear Mr. s name.

ithmetic. By W. G. Borchardt. viii.+221+ ivingtons.) 2s. (with answers).—This volume the *Arithmetical Types and Examples* by the , but contains new matter; it possesses many useful features, and seems to us to be a really good book for school use.

Woolwich Mathematical Papers for the Years 1896–1905. Edited by E. J. Brooksmith. (Macmillan.) 6s.—Teachers will welcome the new volume of papers, and should find in them numerous suggestions for their daily work.

Westminster Test Cards. Scheme B. By E. G. Loder. (National Society's Depository.)—These cards are arranged in packets, one packet for each of Standards I.–VII.; each packet contains thirty-two cards, and each card two sets of questions; each packet contains two copies of answers, and the price per packet is one shilling net. As a help to preparing for examinations, the cards will save a good deal of time to the teacher; we hope they will not be used as a substitute for a regular text-book.

Oliver and Boyd's New Number Exercises. Book VII. 128 pp. (Oliver and Boyd.) Price (paper covers) 7d.—This part, which seems to be the last of the series, takes up the work of the seventh and eighth years, the earlier sections providing a revisal of previous work. Exercises in mensuration, including examples and illustrations of the metric system, are introduced at an early stage; a considerable portion of the book deals with the usual commercial arithmetic, and some attention is given to approximations, while graphical illustrations also appear. The examples are of a straightforward kind, and the book as a whole is a fair representative of its class.

Science and Technology.

Elementary Science for the Preliminary Certificate Examination (General Section). Edited by R. W. Stewart and Wm. Briggs. 176 pp. (Clive.) 2s.—This book has been prepared to meet the requirements of pupil-teachers who are taking elementary science in the Preliminary Certificate Examination. Those who are acquainted with the syllabus of this examination will remember that candidates are required to select one of several sections, in addition to the general section, which includes the simpler physical measurements, properties of matter, heat, and a few fundamental chemical principles. The volume under notice is well adapted to meet the requirements of pupil-teachers. A number of simple experiments, included in the text, are described in sufficient detail to allow the book to be used as a laboratory guide; and few of the experiments offer manipulative difficulties beyond the capacity of the average pupil. We notice that, once more, an experiment on the irregular expansion of water (p. 85) is described which must fail necessarily to convey the required information; it is strange that the considerable manipulative difficulties of an experiment designed to show this important physical phenomenon have been treated for so many years with so little respect in the several smaller text-books which have been published during this period.

A First Year's Course in Practical Physics. By J. Sinclair. viii.+124 pp. (Bell.) 1s. 6d.—Instructions are given for laboratory exercises dealing with length, area and volume, mass and relative density, the pressure of air and related subjects, construction and use of thermometers, and effects of heat. Instead of the usual tables of formulæ and constants, blank tables are printed at the end of the book, so that pupils may enter their own results. A test paper suitable for revision work is given at the end of each chapter. There is a family resemblance in most school-books now produced on practical physics,

and the likeness between this and others is seen, not only in the style of the text, but also in such illustrations as those on pp. 6, 10, 21, 32, 43, 72, 80, and 83. But perhaps it is too much to expect decided originality in a book of this character. In any case, the course of work contained in the present volume is very instructive, and the directions are both concise and helpful.

Practical Exercises in Chemistry. By G. C. Donington. vii.+251 pp. (Macmillan.) 2*s.* 6*d.*—This work has been written so as to adapt the advantages of the modern "research" methods of study to the actual conditions of class-teaching in school laboratories, where of necessity the time which can be devoted to the subject is but short. To this end the instructions have been made as explicit as possible and the results to be expected in any exercise are given only in those cases where they are essential to the sequence of ideas in succeeding work. The volume is intended for use in ordinary secondary schools, its scope being sufficient to cover all the subjects included in the new syllabus in chemistry for the London Matriculation. Besides dealing with problems such as the rusting of iron, burning, interactions of acids and alkalies, &c., chapters are devoted to equivalent weights, carbon, nitrogen, sulphur and phosphorus compounds and to the investigation of some organic substances. The author, in his preface, admits the importance of encouraging self-activity on the part of the pupils, but justifies the issue of yet another elementary text-book as saving much valuable time to the teacher. In conclusion, the volume can be confidently recommended for school use.

Chemistry Lecture Notes. By G. E. Welch. 63 pp. (Blackie.) 1*s.* 6*d.*—This book is written from the point of view that much valuable time is wasted in note-taking, and it is quite the worst thing of its kind that has come under our notice. It consists in a succession of bare facts put down in the briefest possible form so as to be entirely destitute both of any sequence and of literary style and we should consider it a criminal act to put such a work in the hands of a schoolboy. Surely the whole point in elementary science-teaching in schools lies in training the pupil to observe facts and learn how to record what he sees in simple and clear language, and above all to cultivate the faculty of reasoning. But Mr. Welch prefers such statements as "$PbS+4H_2O_2=PbSO_4+4H_2O$ (oil paintings)," or "Lime burning. Kilns similar to blast furnace; fuel and limestone in alternate layers (4 of limestone to 1 fuel). Dampers to regulate supply of air"! Comment is superfluous. What good can chemistry taught on such a plan be to anyone? The volume is bound up with blank leaves intended for sketches and any additional notes.

Art.

The "A.L." Bold Outline Drawing Cards. Twelve cards (25 in. × 20 in.) with 24 examples, in cloth-backed portfolio. (Leeds: Arnold.) 10*s.* 6*d.* net.—As an adjunct of the natural history lesson, or as a means of correlating the natural history with the drawing lesson, these cards should prove most acceptable to the teachers of these subjects. The series consists of twenty-four studies of animal and bird forms, drawn in bold, simple outline, large enough to be seen fifteen or twenty feet away, and conveniently eyeleted for hanging or pinning to the blackboard. The diagrams have been drawn by a "skilful zoologist," who is, we fear, not always so successful in his draughtsmanship as he is, presumably, in his zoology; with few exceptions, however, the drawings are accurate and vigorous, and express in as few lines as possible some ch attitude of the bird or beast represented. Us nection with the natural history lesson, they forn suggestions for note-book sketches, and they are simple to serve as subjects for subsequent memc exercises. Their value as drawing copies will l ably enhanced in cases where the teacher is at supplementary sketches on the blackboard, methods of construction and treatment, and p common sources of error.

The "A.L." Nature-drawing Cards. Two cards 11 in. × 7 in., each packet containing 24 card Arnold.) 2*s.* 3*d.* each packet, net.—These card as not being quite so happy in conception as ferred to above. The drawings are similar in execution, but are printed on cards 11 in. × 7 i intended for distribution among the class, ea consequence having a different copy. This a would not only make the task of supervision an extremely difficult, but it would also entirely p possibility of collective teaching, thereby ent siderable waste of time. As a recreation, o from the customary drawing copy, they may b to keep a class occupied for an hour or so—for does not love to draw an animal?—but they ca considered as a serious contribution to the mat drawing lesson.

Miscellaneous.

The Life and Experiences of Sir Henry F.R.S. Written by Himself. Pp. xii.+4 millan.) 12*s.* net.—Sir Henry Roscoe has play parts in his life that this autobiography shoul a wide circle of readers. He occupies a posi tinguished eminence in the world of science, l greatly the advancement of chemical industry, South Manchester in the House of Commons f 1895, was a pioneer of technical education, an advocate of the claims which it and other l secondary education have upon the resources o State, took a leading part in the foundation o Institute of Preventive Medicine, and was sponsible for the reorganisation of the U London, of which he was Vice-Chancellor fo This is not the place to attempt a survey of varied and full of usefulness as that of Sir He but reference may be made to a few points education. It is pointed out that if our educati encouraged originality instead of repressing it destroying it by examination grinding, the inr power of the Anglo-Saxon blood could easily ke van of progress. But the people of Great Bri understand nor believe in education. Here we per head of children instructed an excessive elementary school, but there is an elementar the Lindischer Platz, Zurich, which costs £6 and by far the larger proportion of the taxes in of Zurich is spent on education. The encou secondary education is our most urgent need at but politicians are too much concerned wi difficulties in primary schools to pay any atte matter. It is necessary to read Sir Henry Ro of his life and experiences to understand the gr for good that can be exerted by a single citiz tact, knowledge, and the instinct which us experiences of the past as stepping-stones The book is full of interesting reminiscences,

pleasure by students and teachers concerned ce and education.

Teach the Bible. By the Rev. A. F. Mitchell. (University Press of Liverpool, and Williams and 1s. 9d.—We turn to the last page to see what Mitchell recommends, and we find that in every are literary or ethical. The historical teachings ble are in this list neglected; and the spiritual are enforced. No doubt this should be so; but e child to be interested in the Bible if Samuel, nd Exodus (we take the author's instances) are nned? The book is a collection of lectures, and f useful thought. But, at the risk of offending, eiterate what has before been said in this paper. t teach the Bible well because we do not know it, or like it. At present we are afraid of it. thought about the Bible has not yet reached the l hearts of the teachers of England; and the ght is moribund.

By A. Neumann. Translated by M. A. Canney. (Black.) 2s. 6d.—This is, we suppose, an book. The historical Jesus is sought for, and the "legends" of the birth, boyhood, miracles, side, along, of course, with the resurrection and ion. If anyone cares to know what the pro- hool think of the gospel story, this book will him. The whole tone of it is reverent and m beginning to end. The book does not deny y, and accepts, in its own way, the Risen Christ the world of to-day.

fe in our Schools. By M. A. Brown. 1–136 pp. 3s. 6d.—This is a good and full book by an Time-tables, with lucid explanations and direc- l sorts, leave the reader never in doubt; but, so see, such subjects as finance, the management the choice of teachers and the requirements made are not touched on. There is nothing new in to the enthusiast; but enthusiasts will not ask : "Can *my* system, which works so well with apted to the poor, the ill-fed, the unwashed, the d, and the overworked?" Circumstances do not ; they are cases.

Education and National Life. By J. E. G. rency. 1–288 pp. (Swan Sonnenschein.) 3s.— s one come across a book with so clear a grasp ational (primary) system. It bristles with know- tously shown. Absolutely fair, it speaks in the ng way for the religious background of educa- it scarcely sees light through the darkness. said on school libraries, on the education of oor, on school nurseries, is excellent; but it account of the great retarding influences that wl after the army of teachers. Men and women d literature; they dislike art; they do not want roved into angels. They love gambling; many ist without drink, and their motto is not We are the product of an earlier generation, e slowly correcting that generation's mistakes g fresh ones for others to correct. The author ches on our *real* difficulties; is he afraid of them?

Buchanan and his Times. 1–96 pp. (Edin- phant, Anderson and Ferrier.) 1s.—A brightly ll printed, and copiously illustrated account of scholar. It is reduced from the larger life by Mr. P. Hume Brown.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Is School Science Worth Having?

The fact is often deplored that so little is done in our schools to teach the art of reading: the vituperative commentaries emanating from East Ham and Longton on my recent article, if not most of the letters it has called forth, afford clear proof of inability to read; even my friend Mr. Donington misrepresents me altogether, for example, as recommending that at school no facts should be learnt save those which scholars acquire from their own practical work. My contention was and is, simply, that far too little is being done in schools to teach the experimental method *properly*. To fly into tantrums over so solemn a question as that I have asked is, to say the least, mere waste of energy. The evidence is overwhelming that very few teachers have learnt to appreciate the fundamental importance of method; nor is this surprising in view of the fact that nowhere is the attempt made consistently to give thorough training in method.

I might have put my question on a far broader basis by asking: "Is School Education worth having?" My conclusion would have been to the same effect; but I thought it better to be constructively critical and to deal with my own special subject. The motes in the eyes of teachers generally may be sufficiently apparent but the beam in my own concerns me most; I am still determined to do all that in me lies to reduce its size, anathemas notwithstanding. Nevertheless, to repeat words I used at Belfast, quoted from Oliver Wendell Holmes: "I don't want you (teachers) to believe anything I say, I only want you to try to see what makes me believe it." I know what the effect will then be. Penitence must come.

And in complaining of the rate of progress I am not alone. In the article on Waste in Higher Education in his book on "The Trend in Higher Education," the late Dr. Harper, president of the University of Chicago, points out that "the introduction of science studies in the high schools and academies does not seem to have produced any serious impression. The fact, however, seems to be that the advantage gained from the prosecution of science studies has not counteracted the disadvantage which follows from undertaking work in a greater number of subjects. In secondary work, dissipation is the order of the day and dissipation is only another term for waste. The effort to give the student a little knowledge of many subjects makes accuracy impossible and consequently renders inevitable a great waste. . . .

"The one habit upon which more depends than on all others is the habit of accuracy. It is, of course, true that some minds are entirely incapable of acquiring this habit. It is, nevertheless, a habit which may be gained to a greater or less degree by careful cultivation; and every mental effort, according to its character, will lead to the development of accurate habits of thought or to the opposite. The boy in the training school is compelled to learn accuracy or inaccuracy. Language cannot describe the incalculable waste involved in the cost to society in the case of every individual whose training fails to secure for him this accuracy. The whole future life of the man is involved."

How many teachers realise that this is the case?

To be of any use, these discussions must be carried on in a serious and relevant manner—some attempt must be made among us to develop the spirit of Bushidō. Lord Redesdale, in his account of the Garter Mission to Japan, makes an interesting reference to a meeting in Tokyō of the Cambridge Society, a society of Japanese gentlemen who have been at our English universities, all of them distinguished men who have made their mark. Speaking of their attitude when at college, he says: "They do not waste their time, these Japanese students; they are no milk-sops and are ready enough to play their part in any game, whether of war or peace. But when they work they work and education is to them something as sacred as religion itself." We need to have a little of this spirit infused into us. Nothing is more surprising than the critical capacity the Japanese have shown in selecting the essential elements of success from western civilisation: why cannot, why do not, we show greater capacity in selecting from the mass of material at hand the essentials of progress?

The Gilbertian Pooh-Bah represents a very human and lovable type; and the pedagogic Pooh-Bah has a certain future; water-tight compartments must inevitably disappear from schools as these become rational institutions.

We do not cultivate truth sufficiently in our schools. What we are pleased to call the development of character eventuates in the universal habit of turning up the ragged seams of our trousers as a pretentious badge of gentility. How can true character be developed in a youth who insist on bearing such an outward and visible sign of lack of mental independence?

In this connection, it were well to remember Emerson's pregnant words: "God offers to every mind its choice between truth and repose. Take which you please, you can never have both. Between these, as a pendulum, man oscillates. He in whom the love of repose predominates will accept the first creed, the first philosophy, the first political party he meets—most likely his father's. He gets rest, commodity and reputation; but he shuts the door of truth. He in whom the love of truth predominates will keep himself aloof from all moorings and afloat. He will abstain from dogmatism and recognise all the opposite negations between which, as walls, his being is moving. He submits to the inconvenience of suspense and imperfect opinion but he is a candidate for truth, as the other is not; and respects the highest law of his being."

A scientific worker must ever submit to the inconvenience of suspense and imperfect opinion—the love of truth must dominate him. This is the message of science—the reason, perhaps, of its unpopularity among the schoolmen.

Mr. Brett will understand from this why I attach such importance to experimental studies as a means of moral training and why I have taken such exception to the slovenly ways in vogue of imparting the instruction. Tennyson's well-known lines may be taken as an embodiment of the philosophy of the truly scientific worker:—

> "Flower in the crannied wall,
> I pluck you out of the crannies;—
> Hold you here, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all and all in all,
> I should know what God and man is."

Surely no slight force as moral training may be conceded to discipline of which the ultimate effect can be thus depicted. But I should be the last to say "Yes" to Mr. Brett's question: "Can all that we require in be formed by an inductive process of experimental however well directed?" Neither can this be acc however, through any other single branch of sch to such an end, all subjects must be made to co-o

If we apply the touchstone of truth to our tea cannot, in the long run, go far wrong: but, difficulty of it!

HENRY E. ARM

Modified Experiments in Chemistry and Ph

Determination of the Equivalent of Sodium.— laboratories experiments involving the use of s severely left alone, on account of the danger been found to accompany such experiments. It pity, however, to neglect such an interesting a experiment as the determination of the equi sodium by its action on water and subsequent ment of the hydrogen produced. Although the method has been in use in the laboratories her last two years, I have not yet had any untowar occur.

A 50 c.c. tube graduated in tenths of a cubic is used for the collection of the hydrogen (Fig. essential that the tube should be full of water; no

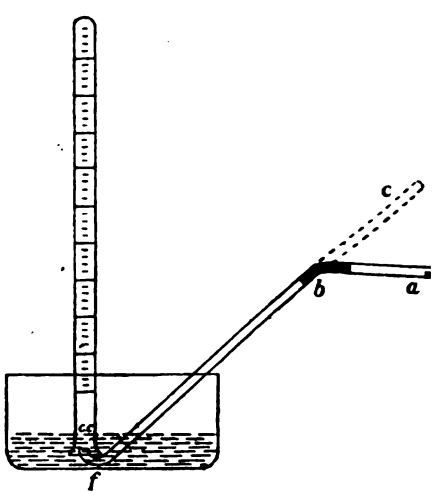

FIG.

bubbles must be present. The weighing tube *a* closing up one end of a piece of glass tubing internal bore) is fitted with a piece of indiarubb and a pinchcock. Its weight is obtained, and t 0·05 gram of freshly cut sodium, shaped so as to the tube easily, is introduced, and the whole accurately. The pinchcock is removed, and the tube is fitted on to the delivery tube (of the sam bore) at *b*. Keeping the weighing tube horizonta prevent the sodium from running down the tube, the delivery tube is brought under the water in basin. Allow the bubble of air to escape from the delivery tube, and then bring it under the mou graduated tube, as in the illustration. The weig is now brought up into the position *c*, when th sodium runs down the delivery tube and round up into the water contained in the graduated t level of the water in the delivery tube at *f* rem stant. It is important that the delivery tube thoroughly dried out before each determination.

example is the result of an equivalent determina- arried out by one of my students :—

Weight of tube + pinchcock + sodium = 15·887 grams.
,, ,, ,, alone = 15·845 ,,

∴ Weight of sodium taken = 0·042 ,,
mperature of water in basin ... ... = 12·6° C.
eight of barometer ... ... = 737 mm.
lume of hydrogen evolved ... ... = 22·4 c.c.
essure of water vapour at 12·6° C. ... = 10·8 mm.
ue pressure on the hydrogen = 737 − 10·8 = 726·2 mm.

recting for temperature and pressure :—

$$22{\cdot}4 \times \frac{273}{285{\cdot}6} \times \frac{726{\cdot}2}{760} = 20{\cdot}46 \text{ c.c.}$$

1 c.c. of hydrogen at N.T.P. weighs 0·0000896 grams.
·46 c.c. ,, ,, weigh 0·0000896 × 20·46 = 0·001833 grams.

833 grams of hydrogen are liberated by 0·042 grams of odium.

gram of hydrogen is liberated by

$$\frac{0{\cdot}042}{0{\cdot}001833} = 22{\cdot}92 \text{ grams of sodium.}$$

termination of the Coefficient of Absolute Expansion Liquid.—The ordinary laboratory method of deter- ng the coefficient of absolute expansion of a liquid by means of the dilatometer is a process involving manipulative skill on the part of the student, and is not an experiment calculated to give a satisfactory result in the hands of a junior student. The following modification of the determination, with reasonable care in the manipulation, gives very tolerable results. The accompanying diagram shows the method and apparatus required. The graduated tube may be the ordinary 50 c.c. gas tube divided into tenths of a cubic centimetre. About 10 c.c. of, say, absolute alcohol are introduced into the dry graduated tube by means of a long thistle funnel, so as not to wet the sides of the tube, and a plug of cotton-wool is in- d in the open end of the tube in order to minimise evaporation of the alcohol whilst the experiment is performed (Fig. 2). A thermometer is attached to the uated tube by means of two rubber rings cut off from a of indiarubber tubing, and the arrangement is then in a beaker of cold water standing on a sand-bath orted by a tripod. The water is well stirred, and temperature of the bath and the volume of the hol are read off simultaneously. A lens helps con- ably in the readings. Heat is now applied to the r (which is kept well stirred) by means of a rose ner. When a temperature of about 60° C. is reached, temperature and the volume of the alcohol are again d. From the data thus obtained the coefficient of rent expansion of alcohol in glass can be calculated, since the coefficient of absolute expansion of alcohol pproximately equal to the coefficient of apparent ex-

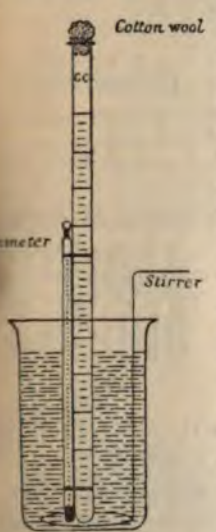

FIG. 2.

pansion of alcohol in glass, increased by the coefficient of cubical expansion of glass, it is easy, knowing the value of the latter, to obtain the real or absolute expansion of the alcohol. The following example is the result of an experiment performed by a junior student in the school laboratory :—

Volume of alcohol after heating ... ... = 10·40 c.c.
,, ,, before ,, ... = 10·00 c.c.

Total expansion of alcohol ... = 0·40 c.c.

Temperature of bath after heating ... = 58° C.
,, ,, before heating ... = 20° C.

Rise n temperature ... .. = 38° C.

Since 10 c.c. of alcohol expand 0·40 c.c. through 38° C.

Then 1 c.c. ,, ,, $\frac{0{\cdot}40}{10 \times 38}$ c.c. ,, 1° C.

= 0·0010526 c.c.

Coefficient of apparent expansion of alcohol in glass = 0·0010526
,, cubical ,, glass ... ... = 0·0000258

∴ Coefficient of absolute expansion of alcohol between 20° C. and 58° C. ... ... = 0·0010784

The coefficients of absolute expansion of other liquids may be obtained by this method, the most suitable liquids being benzene (0·00138), petroleum (0·00099), and turpentine (0·00105).

E. T. BUCKNELL.
St. Philip's Grammar School, and the Oratory School, Birmingham.

Modern Experiments in Education.

WE ask you to allow us to draw attention through your columns to a valuable educational experiment which has been going on long enough now to establish a definite result, and we venture to think is deserving of attention from all those who are interested in the advance of education in this country.

About fifteen years ago Miss Mason, of the House of Education, Ambleside, began to organise the teaching given in private schoolrooms with a view to raise the standard of the work done to that accomplished in the best schools. The machinery by which she has achieved her purpose has been very simple. She has trained a certain number of governesses at Ambleside on her own lines, but she has not confined her work to their schoolrooms. A suitable time-table and scheme of work in four grades may be had by any member of the Parents' National Educational Union under certain conditions, and the 500 schoolrooms that have adopted her scheme form what is known as the Parents' Union School. The experiment to which we allude has been carried out in this "school" for fifteen years, and its success has led Miss Mason to submit her results to the profession with a view to their wider adoption. We are among those whom she was good enough to invite to a conference held at the House of Education at Whitsuntide, and we desire to record our sense of the value of her experiment as regards the literary side of a child's education.

The curriculum of the Parents' Union School is very wide, and includes all the subjects ordinarily taught in schools, besides hand-work and physical exercises. The originality lies in the methods of work prescribed by Miss Mason with regard to "English subjects." Miss Mason bases all humanistic work on a study of history, and from the earliest age devotes much time to it, demanding, from the first, independent study on the part of the child. The books he is to use are selected with the greatest care;

mere text-books and readers are discarded, and those of living interest chosen. Miss Mason allots a certain portion for the study of each class each term; the child reads part of this daily in lesson hours, and the teacher's function is confined to directing the work, inspiring interest, and setting some test that demands reflection, *e.g.* calling on the child from time to time to narrate something of what he has read. During the term a great deal of ground is covered, and towards the end a few test questions sent by Miss Mason are answered, children who are too young to write dictating their answers to others. Some hundreds of these answers were submitted to us for inspection, and we are of opinion that they bear out Miss Mason's belief that her system has succeeded:—

(1) In forming habits of concentration and of independent study at an early age.

(2) In overcoming to a large extent the difficulties of English composition and spelling.

(3) In imparting a considerable amount of knowledge of various kinds.

We watched a small school at work on Miss Mason's system, and discussed freely with her various questions that were raised. Her testimony was supported by those present who, as parents or teachers, had personal knowledge of the work, and in particular by the headmasters of two preparatory schools who have adopted the Parents' Union scheme for their lower classes.

Detailed information may be obtained from the hon. secretary, Mrs. Franklin, 50, Porchester Terrace, London, W.

(Signed) W. C. COMPTON, Headmaster, Dover College; B. FIELD HALL, Principal, High Cliff School, Scarborough; MARGARET I. GARDINER, Headmistress, St. Felix School, Southwold; ETHEL GAVIN, Headmistress, Notting Hill High School, London, W.; C. H. GIBBS, Principal, Sloane Street Preparatory School, S.W.; CECIL GRANT, Headmaster, Keswick School; BERTRAM HAWKER, Member of Education Committee, South Australian Government; F. HAWKESWORTH, The Vicarage, Ambleside; LIONEL HELBERT, Principal, West Downs Preparatory School, Winchester; S. HERON, Headmistress, Wyggeston Girls' High School, Leicester; JULIA F. HUXLEY, Principal, Prior's Field, Godalming; CYRIL JACKSON, formerly H.M.C.I.; L. KJELLBERG, Principal, Fridhem, King's Lynn; C. LOWRY, Headmaster, Sedbergh School; E. R. MURRAY, Lecturer, Maria Grey Training College; CLAUDE H. PAREZ, formerly H.M.C.I.; MARY WOLSELEY LEWIS, Headmistress, Church of England High School, Eaton Square, S.W.; E. WOODHOUSE, Headmistress, Clapham High School, London, S.W.; J. WYNNE EDWARDS, Headmaster, Leeds Grammar School.

The Seven Sevens.

I SEND you herewith a solution of the interesting problem which appeared in last month's SCHOOL WORLD, and I have given with it, in some detail, the process of reasoning by which the result was reached.

(1) Since multiplication of the divisor by 7 gives 6 figures in the product, while the 2nd and 4th multiplications give 7 figures, the divisor must begin with 11, 12, 13, or 14, and the 2nd and 4th figures of the quotient are 8 or 9.

(2) Since the product of the divisor multiplied by 7 has its 2nd digit 7, it is found by trial that the divisor must begin with 111, 124, 125, 138, or 139.

(3) The 3rd remainder must evidently begin with 10, and therefore also the 4th product begins with 10. Hence either divisor begins with 111, and 4th quotient is 9, or divisor begins 125, and 4th quotient is 8.

(4) But if 9 were the 4th figure of the quo since the product has its 3rd digit from the r divisor would require to begin with 11197, w make the product by 7 have an 8 in the 2n stead of a 7. Hence the 4th figure in the qu and the divisor begins with 12547, the 6th fi less than 5.

(5) Since the 3rd product (by 7) begins 878, a above cannot be greater than 979 . . . ., th remainder begins 101; and since the 4th pro 100, therefore the last remainder begins with the last figure of the quotient must be 1.

(6) On trying 4, 3, 2, 1 in succession as 6th divisor, and working the division backwards, that the 2nd of these alone satisfies the con yet considered, and that the following is the full

```
1 2 5 4 (7) 3 ) 7 3 (7) 5 4 2 8 4 1 3 ( 5 8
              6 2 7 3 6 5
              -----------
          1 1 0 1 7 (7) 8
          1 0 0 3 7 8 4
          -------------
            9 (7) 9 9 4 4
            8 (7) 8 3 1 1
            -------------
          1 0 1 0 3 3 1
          1 0 0 3 (7) 8 4
          ---------------
                1 2 5 4 7 3
                1 2 5 4 7 3
                -----------
```

J.

Drummond Villa, Inverness.

[Solutions have also been received from the the problem and from J. L. Miller, of Nottin School.—EDITORS.]

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The School World

A Monthly Magazine of Educational Work and Progress.

3. SEPTEMBER, 1906. SIXPENCE.

CURRICULUM OF SECONDARY SCHOOLS.[1]

the Hon. and Rev. E. LYTTELTON, M.A.

ot unusual for writers of papers to begin
various reflections on the surpassing
ortance of the subject with which they
to deal. But I am constrained to do
site by the hope of keeping the discus-
from the feverish tone of controversy
ch it is often pursued. One gets to be-
in controversy as life goes on, and to
ore and more with Dr. Westcott that
rsy nearly always is concerned with de-
nd when the controversialist discerns this
excitement is allayed and reason has a
ance of being heard. Thus we may, I
efuse assent to the prevailing opinion
bject which is provocative of controversy
arily, and for that reason, of first-rate
ce. Anyhow, nothing but good can
m an honest attempt to recognise the
n of things in an educational subject
the curriculum of studies in secondary

then, let us notice that while at the pre-
we are coming to believe in education as
nonious training of all human faculties,
culum of studies is concerned with the
alone; and though intellectual training is
teresting division of the whole subject,
only a division; a fact worth recalling
think of our strange want of success in
npared with physical and even spiritual
anyhow in this country.

lly, curriculum questions only concern a
f this division. The human intellect is
y a great many other influences than the
r order of the subjects it is made to
nd there is no reason to suppose that
ier influences are any whit less potent
order and selection of subjects in deter-
he quality of the mental powers and in-
hich finally result. I mean this. If you
the curriculum of subjects taught in the
th century with those taught nowadays in a progressive modern school, the difference is enormous; but the resulting mental qualities are strangely similar. To hear some disputants talk one would imagine that the choice of subjects was everything. But facts seem to show that it is only one among many influences, and by no means the most important. Are we not learning to-day that environment is more potent in the formation of character than heredity? If so, how much more, then, than curriculum? Some such consideration as this may explain how it comes about that many men who have never studied the grammar of any language yet express themselves well; and others who have never worked in a laboratory yet do understand the laws of evidence and can somehow reason pretty straight. For a very long time yet it must remain uncertain how far the selective and assimilative powers of a young mind can extract good nourishment out of a subject which seems at first barren and uncongenial; and in so far as it does so, who knows how much of the result is due to the subject as compared with the teacher, or with the home influence, or the school environment, or heredity?

Now all this seems to point to the conclusion, dear to the hearts of many Englishmen, that it does not really matter much what you do. But we know far too little to say that much; and even if the effect of curriculum be less than is sometimes supposed, that is no reason why we should shirk the task of making it as good as we can. To do that we must take account of one or two laws of mental growth, and bring them into relation with the kind of training which different subjects tend to encourage. We must be a little psychological, and ask first what we know about the development of human faculties in the young. In laying down certain simple principles before coming to practical recommendations, I am hopeful that critics may be able to discern the exact reasons of any divergence that there may be between their own views and mine. In the interests of profitable discussion, I hold it to be absolutely necessary to explain latent assumptions instead of leaving them to be guessed at, and to avoid urging a single recommendation without making fairly clear the principle on which it is based.

[1] read before the Educational Science Section of the British its meeting at York, 1906.

There appear, then, to be two or three leading principles which we must have in mind. First, that certain faculties develop in the young human being before others, the power of acquiring knowledge of facts before the power of reflecting on them. Next, that there is such a thing as a natural transition from the one stage to the other, which takes place in the majority of cases at approximately the same age, between fourteen and sixteen. If we did not believe this statement to be somewhere near accurate, we could not hope for any rational system of education. As it is, we instinctively act upon it to a certain extent; but it is worth pointing out that there is a permanent danger of our violating the principle by making premature appeals to the reasoning faculties, that is, of insisting on conclusions being drawn before the facts have been patiently and thoroughly gathered. A young teacher has a keen appreciation of the pleasure afforded by the exercise of the reasoning powers in their early stages, say at seventeen; and it is very difficult for him not to suppose that this pleasure might have been anticipated in his own case, if his teachers had been more enlightened than they were. It is true that nature protects boyhood from this peril by yielding constant and reiterated proof of the reasoning faculties being in a completely dormant condition, but we all know how to misinterpret these indications, and to regard them as proofs of the incompetence of the teachers who had charge of the boy before ourselves. This is a vicious inference often drawn from what we call "howlers." I believe "howlers" to be sent to us primarily for our recreation in hours of drudgery, but also for our instruction, teaching as they do the utter uselessness of trying to hurry Nature in her developing process by anticipating a later stage before the earlier has been rightly employed. Therefore facts are to come before reflections, the drudgery of collecting facts being greatly relieved by the natural vivacity of the wish for knowledge during the years of childhood to about fourteen years of age.

Thirdly, we are to aim at a harmonious development of faculties; that is to say, certain kinds of mental exercise obviously train different faculties from other kinds; and no matter how great the precocity in some faculties, or the backwardness in others, the training ought to be even, not aiming at dazzling performances in one line of activity unless there has been thorough and adequate effort given to other activities. We notice how this idea is modifying our conception of physical training. Nowadays the most scientific form of bodily exercise aims at leaving no muscles uncultivated, but it does not aim at such one-sided development as seems necessary if onlookers are to be captivated by brilliant achievement. I have not time to justify this assumption by argument, but merely mention that in making recommendations I am taking its soundness for granted.

Fourthly, it is assumed that many incapable of full development unless th ercised by delicate hand and eye work.

Fifthly, we must make quite clear two ideals we have before us: the aw a strong desire to learn, or the equipp certain minimum of knowledge suppc indispensable at a certain age, say n twenty-two. It is idle to upbraid a t cause his pupil is ignorant of certain nineteen, when the teacher's aim has to equip but to inspire: not to ens acquaintance with many subjects, bu grip upon a few that as long as life co mind will strive towards an increase Again I cannot argue for one as a other, but must simply state my pre the principle of inspiring rather than c In other words, I hold that, however be to carry out, we are to aim at g pupils through mental activities whi to their conformity to Nature, shall i be joyous, not at all because they are effort, but because the effort is con warded with a sense of growth. Thus ever age school training may cease, w faithfully to plant the wish to go on lear ing that though at twenty-two years English youth may be surprisingly ign he ought to feel the difference betw ing and not knowing, and the joy whi panies knowledge, though every ste means effort not free from pain.

Next, we may be guided by the similar subjects such as languages e some extent the same faculties, but th less the case if they are taught in diffe and with different aims. It is possibl a language so that the faculty princi cised is memory; but another way o it may bring the reasoning power int the appreciation of literature, or the of the ear, or of the vocal organs i vowel sounds. Here, therefore, curricu tions depend on methods adopted. Y infer from a glance at the time-table guages are being studied to excess, u also know how they are being taught. us apply this remark to Latin, Greek, ar I suppose we have all taken part at var in the singularly barren disputes as to parative merits of Latin and French, or and modern languages. But we forge main fact to bear in mind is the stn ability that, if taught in similar fashio will train and fail to train exactly the sa ties as Latin—that is, memory, then re perhaps composition. But if Latin is it commonly is, it gives all that a lan in the way of gymnastic, while it fails i the ear, and its literature, for boys a never first-rate. Exactly the same ma of French, unless we teach it in th fashion, that is, by constant appeals t when a further object comes into view

oncord between us and our allies by means of communication. Thus, if kept mainly as a gymnastic, French is taught phonetically, in training good ation and saving the English vowel om degradation. But Greek gives what others fail to give—a literature quite the young human being. Every rightly ed boy and girl must love the Odyssey; odotus, and, later on, Plato, a few plays, aps Thucydides. Thus the three lan- need not overlap, but, if not, a good trouble must be given to the methods ing them. In particular, as regards erything must conduce to teaching read- regards Latin, to writing; as regards to training the ear. But at this point most necessary distinction must be

we all agree that boys' linguistic powers rmously, and from those who are slowest ing the rudiments of languages it is idle expect literary appreciation of anything erhaps, of the English translation of the and some English ballads and stories; not idle to expect good results from lin- ymnastic training, nor from training of Now, from those who are less slow, far from quick, the lower class of those e call average boys, the literary appre- nay be expected if the appeal is very made; in other words, if the attempt to scientific knowledge of the language is abandoned—if composition in it is not d, but if everything is subordinated to rudiments just so far as to make the of Homer in the original a little more than it would be in a translation. ill differ as to how far that is, and also h how many boys in a group this attempt e made. But I am convinced of one he laborious effort to teach average and s Latin and Greek *on the same lines* -*i.e.* by wobbling feebly between two th impossible, the scientific grasp of the s, their structure and syntax, and so well as the literary appreciation:—this say, pursued, as it has been, with zeal and conscientiousness and self-de- is a monumental fact in the history of stupidity. I cannot see that the world any the poorer if it were relinquished. rve; there are two ways of relinquishing may either discontinue one of the lan- or greatly modify your methods of teach- For my part, I hold that, excepting the ly incapable, all boys in secondary ought to be given the chance of learning pell out the Odyssey of Homer, and that y of them this should cease at sixteen be begun till thirteen. But before any- agree to that, he must believe that the of necessary subjects is, after all, not

we can proceed to the consideration of different subjects, and it will be remembered that the air is clear of questions of professional careers and of the age at which schooling ends. We must not concern ourselves with the thought that this or that subject will be useful for this or that profession, because the attempt to meet at school different professional needs is perfectly hopeless, but may easily upset our time-tables, and, what is worse, degrade our ideal. Among all the imbecilities of our recent educational history perhaps there is none more baneful than the attempt to give boys what is professionally useful with the hope that their idea of knowledge will remain lofty and disinterested meantime. I confess I look with deep disquiet on the action of examinations in this respect; but if to this you add the element of £ s. d., all hope of fostering the love of knowledge for its own sake is fairly shattered; and I am afraid that the proof of this assertion is to be found in our marvellous system of training cadets for Sandhurst. But this is a digression.

So far, then, we have been considering principles, and have gently wandered into the region of practice. I would finish the subject of language by saying that the use to be made of English in the early years up to fourteen should be twofold: first, to learn good ballads by heart; secondly, to use it as a means of comparative analysis, the language selected by way of contrast being either Latin or French. It would be very easy to recommend what would be most desirable, viz., that every child should enjoy the benefit of a French nurse. But are we prepared for a huge influx of French nursery-maids? And supposing, what must be true, that many households could not afford it, your whole curriculum in regard to French is spoilt. The same result would follow if the nursery-maids refused to come. Of course, for purposes of talking French, the language ought to be mainly taught in early childhood, else there is danger that the adult, when he speaks French, will fail to obtain an intelligent hearing, and his speech will edify himself alone, and perhaps will fail to do even as much as that. But let us avoid analysis of English by itself. It should certainly be learnt through comparison with another tongue.

As to science, I sincerely hope we are agreed that it trains the mind in an indispensable way, but in a way different from language. Probably we have wasted many thousands of pounds on equipment. My belief is that very simple instruments suffice for a good teacher of young boys, and that laboratories should be reserved for specialists above sixteen years of age. But a headmaster who tried to act upon such a belief would be called an utter barbarian and a fossilised obscurantist, and so on. To avoid such a fate, the harassed authorities have instituted in past years a system of science lectures to large classes, which, of course, have very little connexion indeed with what is called science teaching. The function of a science lecture is not to teach boys to think or to observe any more than to use

their hands, but simply to convince them that if they push on far enough and persevere through difficulties, they will reach to portions of the subject which are nothing short of fascinating. I have read in an economical treatise that the use of luxurious living lies in the stimulus it gives to the proletariat to work hard in the hope of some day doing likewise. We may hope the economist was wrong, but the theory serves as an illustration, and, however questionable may be the effects of luxurious display on the morals of the poor, there need be no doubt about the good of a science lecture, provided there is no confusion between a mild stimulus to endeavour and endeavour itself. In childhood, then, there ought to be glad gathering of facts without any addition of what boys call "jaw," by which I mean that if Mrs. Boole is right we still spoil an immense amount of scientific and mathematical teaching by introducing principles too early. It appears that there are ways thoroughly well adapted to children of giving a knowledge of elementary facts, not only of natural science, but also of geometry and conic sections, without departing in the least from the natural order of mental development, and without spending much money, this latter being a subject which will intrude itself at intervals in this discussion. There should be, then, science mixed with literature before sixteen, and even after, when specialisation has begun, neither subject should be pursued in isolation from the other.

There remains a hotch-potch of subjects, each of which has its own noisy advocates: English composition, geography, history, German, music, handicraft, gardening, rifle shooting, and a goodly batch of others. If a reader of a paper is heard to say that one of these ought to be postponed or pursued only in play hours, he is at once denounced as retrograde. But the question is not whether the subject is in itself interesting, nor whether it has evoked the faculties of our critic in his earlier years better than any other, but what is possible, and what is most desirable of the many alternatives.

I could easily deliver a long and moving encomium on each of these subjects of study, without, however, advancing the consideration of the question in hand by one single inch. There is no doubt whatever that when taught by the right man in the right way any one of this list of subjects might become an instrument of intellectual development; but how if the right men cannot be found and the right way is not known? I will therefore only give as my personal opinion that of the above-named subjects, and in view of all else that we teach, there are three which seem to me quite essential, and in this order: music, English composition, and geography. I would suggest that we might do more to foster history reading out of school, which would not fail of its object if only our teaching did not so often damp the wish to learn instead of kindling it. And to anyone who thinks or says that this idea is ridiculous I will only say that I envy him his power of being very positive in a question.

To sum up. These recommendations as I have said, certain principles. The the hope that utility, when that wo means £ s. d., may be wholly put a discussion of this sort, and even if th be found to be Utopian, we certainly a trying first to determine the needs training, before we allow materialism havoc of our ideas. One more principle adopted, that of placing a sufficient subjects before a young boy to test his tastes, sixteen being roughly chosen a when mainly those tastes ought to be Of course it will be said that too man are retained, and there is no cry in educ so clamorous as that which calls for a of the curriculum. But a cry which is in all quarters at once generally contai biguity in its meaning; and it is rathe us to go on shouting "Lighten the cu and then for everybody to insist that, his own subjects shall be retained. T growing feeling that we fail in thoroug if you throw a lot of subjects overt don't make sure that those which ar shall be thoroughly learnt, but you do that in regard to subjects discarded shall for a time be thoroughly ignora is not a blessing in itself, unless it m the pupils' minds are being really nou other pabulum so well that they are sure the discarded subjects as successfully allows when they are a little older. words, the problem is not solved by gi to a subject so well as by well-c methods; and the methods to be adopted ing one subject A depend quite as mu prominence in the curriculum of B, an jects aimed at in teaching it as on th ments of A itself. This is not simply ing, but it means correlation—that is t patient effort to secure that the objec study shall be clearly seen, and then a scheme which contains other subj other aims. Into this region of e science we have only made a very slight

THE SECONDARY-SCHOOL CURR AND THE TRAINING OF TEACI

By Arthur C. Benson, M.A.

IN offering a few considerations on tl of the Secondary-school curriculur begin by confessing that I am nc acquainted as I could wish with the w modern sides at public schools, owing t that the whole of my educational experi as a pupil and as a teacher, is derived fi the only school, I suppose, of first-rat ance, which has not attempted to e modern side.

[1] A paper read before the Educational Science Section Association at its meeting at York, 1906.

nough I have little or no practical ac-
ce with the working of modern sides, yet
nd to say that most of my professional
who are engaged in administering such
systems as prevail at public schools, seem,
ted, only too ready to lament or contemn
iencies of these systems. Moreover, in
ect, I cannot help feeling that my ac-
ce with the detailed and minute results of
al system, relentlessly and exclusively
o the boys of a big public school, is, on
e, an advantage to a critic of secondary
n, because my experience has convinced
olutely and conclusively, that, for the
jority of boys, the classical system, how-
scientiously administered, is, under pre-
ditions, both with regard to its subjects
methods, I will not say quite an educa-
rce, but a deliberate disregarding of most
nethods by which intellectual influences
brought to bear on the young. "*Sunt*
riculo Collegisse juvat pulverem!"
nore I reflect on my educational experi-
e more I am convinced that the whole
s framed far too much with a view to
liscipline of a gymnastic kind. Even the
that discipline has been largely decreased
uthless multiplication of subjects, so that
d, applicable to the old limited curricu-
o longer applicable to the swollen budget.
orse point is that there is so little appeal
is interesting or beautiful; so little at-
nade to enlist the imagination or the

And yet the basis of all humanistic
n is the belief that nothing on which
y has ever spent care and love can ever
lose its charm.

say there are many teachers who could
icate some of this stimulus to their
he lack of it, when boys leave the public
is very conspicuous; but here comes in
difficulty caused by the congested curri-
hat there is no time. There is only just
get the elements firmly into the boys'
nd on the horizon loom the thunderclouds
ination, clouds which, to use the phrase-
the old hymn, the saints certainly agree
ing, but which are likely to break upon
ds in anything but blessings.

not wish my criticisms to be purely de-
, though I believe that the first function
ducational reformer will for a long time
ely destructive one. It is not enough to
the admitted failure of modern sides, as
asoners do, and say, "There is the result
lesired change of subjects." Such critics
state that a very large majority of boys
w any intellectual promise are destined
niversity, and that while the universities
the classical fence, a boy cannot be
ed from the classical side to the modern
he is destined to the university; so that
sides, with a few exceptions, tend to con-
he unpromising material from the intel-
oint of view.

Moreover, half the educational disasters produced by our secondary system arise, in my belief, from pursuing the minute, detailed, philological, professorial method in linguistic teaching. Many boys remain struggling so long in the slough of despond which is largely composed of the technicalities of grammar, they are so confused by being taught the elements of three unfamiliar languages all simultaneously, that, when they emerge, they are incapable of believing that intellectual pleasure is derivable from the further pursuit of studies the initiation into which was so wearisome. Most of them do not emerge; they scramble out on the nearest bank, and remain convinced materialists for life.

Thus, while the minute and dilatory methods applied to the teaching of classics are applied to the teaching of modern subjects as well, we are courting disaster. The principal defect of public-school education at the present day is its diffuseness, its lack of concentration, its vagueness, its desultoriness. The boys master so little, and so seldom seem to learn to use their minds; they have only learned how to set their minds to work in a mechanical way, as one might start a machine. The crying need is *simplification*. My own belief is that by taking out of the ordinary educational scheme, one by one, all the component elements which are not absolutely essential, and by keeping the balance of subjects carefully in view, it is possible to arrive at a simple core of education, which should be available for all boys, while a little should be added at one point or another, with careful reference to the individual boy's tastes and abilities, by which the emphasis might be laid on one group of subjects rather than on another. It may be objected to this that it would be impracticable; boys, it may be said, must be educated more or less in the lump, and the schoolmasters cannot afford to manipulate a boy's idiosyncrasies so delicately.

My own view is that the scheme is not in the least impracticable, because, though individual characteristics are strongly marked in boys, yet it is very easy to group boys on certain fairly broad lines; and if the experiment were tried on a large scale, the numbers in the different classes for whom it would be necessary to provide would not be found to vary very seriously.

If (1) French, (2) arithmetic, (3) modern history, English and European, (4) geography, (5) elementary science, taught by popular lectures, with demonstrations, (6) Bible teaching, and (7) English, could form the central core of education, this would be ample for the majority of average boys. The French should be taught most thoroughly, so that a boy would be able to read it with absolute ease, and write it flexibly and accurately; and the same would apply to the boy's writing of English.

One point demands a special word of explanation: the reason which induces me to omit Latin from the curriculum. I am well aware of the effectiveness of Latin as an educational instrument, and of the vital necessity that boys should

so far learn to shift their mental point of view as to be able to conduct logical processes in an unfamiliar medium of language. But I venture to think that, for the boy whom I have mainly in view, one unfamiliar language is enough, and as I am not prepared to eliminate French from the curriculum, I think that the linguistic training should be acquired through the medium of French. But I have another reason for laying the emphasis on French, and that is that it has a utilitarian value. I think that educational theorists are apt to make a bugbear out of the word utilitarian, and, so far from thinking that it is a disadvantage to a subject to be of practical value, I think it has one immense advantage. The absence of any obvious motive for endeavour on the part of the boys is a marked characteristic of the classical system. Parents, as a rule, take the utilitarian view of education, and when boys complain at home that they do not see the use of what they are doing, there are very few parents who will encourage them to believe in the philosophical value of apparently otiose knowledge. If the schoolmasters frankly adopted French as their chief linguistic medium, neither the boys nor the parents would question the utility of what was proposed; and then it would rest with the schoolmasters to see that the training in French was literary, and not purely utilitarian.

To revert to the details of my suggested scheme, the modern history of England and Europe would give the boys an inkling of the development of modern political questions, whereas the system of doing isolated periods produces nothing but mental confusion. It is so easy to forget that boys do not possess the large, vague, floating stock of hazy general knowledge that men as a rule contrive to acquire, which gives an interest to isolated facts because a dim general plan of history, apprehended subsequently to school-days, through conversation and desultory reading, is lying about in their minds, into which the new details, however loosely, can be fitted.

To proceed with our curriculum, the science should, I believe, be elementary, and largely illustrated by experiments. Experience is against the theory, so dear to certain educationists, that boys are taught accuracy by compelling them to devote their time and energy to work that is irredeemably and essentially dull. The theory only results in contempt and dislike for intellectual processes, which is the rich grain of so much of our educational seed!

Then, according as it is discerned what the boy's special idiosyncrasies are, so should those abilities be catered for. A boy with literary and linguistic tastes should do Latin, Greek, and possibly German; a boy who is linguistic, and not literary, could do German and be spared Greek; and so on, similarly, with each subject, so that every boy would have a solid centre of necessary work, and as large a margin as possible of work that specially interested him. Of course, mistakes would sometimes be made, but they are made on a far more colossal scale now. At Eton, for instance, all the boys are practicall ists in classics. This, or some similar s the only practical solution for our pr content, especially as the elements of are so very various in character.

With regard to the question of th of teachers. The time may be hopefu pated when a teachers' training depar be a normal adjunct to every public sch importance. The essential thing is no by teaching the young man fresh fro versity the theory of the thing; let him r acquaintance with the practical diffic personal problems first, and after a ye of such discipline a man would be in to profit by a six months' course of t not before. Training of teachers may b as an educational factor of high impor I would here venture to recant a forme opinion on the subject; I am equally that the training should neither be too nor too scientific.

What I should deprecate, and the dar I see ahead in the formal and technic of teachers, is that the art should be systematised. It seems to me of the u portance that teachers should be enco make their own method, and to deal wit in an individual and characteristic way ing is so delicate and psychological a and its success depends so largely upo servation and perception of idiosyncra to attempt to train teachers too forma to me very much like training a man for of paternity. We must realise that, in plex ramification of modern life, we teac delegated to us what is primarily a function. I have a great horror of adopting a system in its entirety, howev and subtle a system it may be; the that a teacher has to bear in mind is th is an individual and not a type. Of cou are certain characteristics that are typica hood, and a classification of temperam a certain extent, possible. But the re ought to be prepared to discard his th moment's notice, and he ought never his pupil as typical.

That is why I should try to insist, possible, upon a teacher having some experience first; the instruction of a t training college, where the question of does not come in, and where even the dividualistic teacher is likely to be affec direction of self-repression by the pr critics, however benevolent, is a very thing from the problem with which the will be ultimately confronted. I am no all decrying the value of skilled technical A man may be shown how to avoid cert difficulties; he may be brought to realis of angle at which a thought impinges immature mind; but it ought to be impre all those who are being trained as tea

ust not be afraid of using their own , and that they must discover how they dle a situation as effectively and individu- ossible. The primary requisite for a good is to cultivate imaginative sympathy. He ot desire that the children he teaches perceive things in his way, but in their y. He ought to be prepared to combat ientary fallacies of immature minds; and training should be, so to speak, patho- rather than educational. He should be to make a diagnosis of the various forms tal paralysis which are the natural con- ts of immaturity; and thus his training e devoted rather to showing him how to h the negative and, so to speak, diseased s of immature minds, while the positive the matter should be largely a question of onal factors which he brings to the task.

HE BALANCE OF STUDIES IN SECONDARY SCHOOLS.[1]

By T. E. Page, M.A.
Charterhouse.

rder properly to adjust the balance of dies in secondary schools, there is a press- need, not merely for discussion, but for l action. To that end a strong committee be immediately formed—and the British tion is in an excellent position to take the e—with a view:—

drawing up, at least in outline, a scheme ral study to be pursued, as a preliminary pecial training, by *all* pupils, (*a*) in schools prepare for the universities, and where tay until the age of eighteen; (*b*) in other which do not usually prepare for the uni- , and where pupils often leave at the age en;

indicating, as far as possible, what should ethod and purpose of teaching the various chosen;

what stage, if at any, "specialisation" be allowed.

e present time in the large public schools hich the writer is especially acquainted dition of things is somewhat of this nature. s forty or fifty years ago teaching in such was almost wholly classical, circumstances w wholly altered; but there has been no and systematic attempt to deal with a ler of things such as has been created by ense advance in scientific knowledge and red demands of modern life. In fact (i) e old classical teaching has been retained, great variety of other subjects has been to it in a haphazard manner, with the hat boys are wholly confused by the be- g number of things they have to learn, they learn nothing well, and lose all real mental training; or (ii) classical study has been abandoned altogether by boys who join either an "Army Class" or a "Modern Side," in neither of which does any real educational purpose exist, the former aiming merely at success in examinations, which are continually altering their character according to the changing humour of military authorities; while the latter has usually no higher aims than to give boys what is called a "practical," "useful," or "commercial" education, the study of languages, for instance, being conducted chiefly with reference only to their utility, and that of mathematics and science only to their application.

As far as can be judged the tendency is at present to oust classical study completely. The pressure of competition and the obvious commercial value of scientific knowledge make it every day more difficult to maintain a study which has no apparent "wage-earning" value; and yet in the interest of science as well as literature (using those two words in a wide sense) it is vital that in education no study should be estimated too entirely by the standards of the market or the counting-house. If scientific men allow that type of culture which is represented by classical study to pass into disrepute because it does not "pay," they will find that scientific study too will soon be required to stoop to merely commercial aims. But to make such aims supreme is to ruin education, the purpose of which is not merely that a man should be able to earn his bread, but also learn to use his powers wisely and worthily, and which has for its end not only wealth but well-being. Literature and science—again using the terms with the widest meaning—are in fact the two component parts of education (putting aside for the moment such training as is manual or physical), and no form of education is other than maimed which neglects either; and the one object of all schemes of education should be (1) to see that these two studies are properly combined, and (2) that each is so taught as (*a*) to aid moral and intellectual growth, and (*b*) to be of actual service in the necessary work of gaining a livelihood.

The task is a difficult one, but the problem is in itself clear. It is roughly this:—What must we teach in the way of literature, *i.e.* of all that is meant by culture, art, the humanities, history, or the like; and what in the way of science, *i.e.* not only of science, but mathematics, geography, &c.? And, secondly, how shall we teach it? Shall we teach language, for instance, chiefly as a mental discipline, as a means of reading with appreciation, or as a convenience in practical life? And so, too, with science and mathematics. Shall mathematics aim at making boys ready-reckoners, and science at teaching them to explain a motor-car, or what? At present all is chaos, and the demand of the market seems likely to become the controlling force unless some body with nobler aims steps in. The British Association is such a body, and its Educational Section has a great opportunity of fulfilling a great duty.

[1] Extract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

THE CURRICULUM OF THE PREPARATORY SCHOOL.[1]

By G. Gidley Robinson, M.A.

THE part assigned to me in this discussion is to lay before you the case of the Preparatory Schools—their present difficulties, and their wishes and proposals for a reformed curriculum; and I have undertaken it in the conviction that in this matter the interests of these private schools (for such they nearly all are) and of the public schools are identical. It would save time if I could assume that you are all familiar with the Preparatory Schools Blue-book (vol. 6 of Special Reports on Educational Subjects), which was published in December, 1900, when Prof. Sadler was at the Board of Education. But I shall be on safer ground if I briefly restate the case as therein recorded. I can do so without fear of misleading you; for, in spite of some surface changes, good as far as they go, the position is essentially what it was six years ago.

The preparatory school is responsible for the first stage in a public-school education—those precious years, from 9 to 13½ or 14, in which impressions made are deep and lasting, and when it is of the first importance that any gift or aptitude a boy possesses should be discovered and fostered. But preparatory schools are not free to choose a curriculum for themselves. That depends upon the requirements of the second stage, *i.e.* of the various public schools for which the boys are being prepared. What, then, do the public schools require? At the entrance examination held in common last month by thirty-seven of the leading public schools (including Eton, Harrow, Rugby, and Charterhouse), papers were set in the following subjects:—Latin, Greek (or as an alternative subject, German), French, English—three languages, you observe, besides the mother tongue—Scripture, English history, geography, arithmetic, algebra, geometry, and Latin verse (or, as an alternative, a paper on elementary science and observation of nature). These, then, are the main subjects of instruction. I say nothing now of the training of ear and eye and hand by singing and drawing and carpentry and so on, which many preparatory schools, quite rightly, consider essential. You cannot blame them; but they all take time, and add to the congestion of the curriculum.

This common entrance examination is the outcome of joint conferences held in 1903 between the Association of Preparatory Schools and the Headmasters' Conference. It has been supported by preparatory-school masters, because they feel that it is necessary at whatever cost to keep the curriculum for little boys as wide as possible. But the crux of the situation is that *this multiplicity of subjects is combined with a demand from the public schools for early specialisation as well.* Entrance scholarships are the ro mischief. They are offered by the publi —as they themselves admit—in order t clever boys, who will afterwards do thei credit by winning prizes at the univer is the necessity of getting these scholar didates up to the required standard th the curriculum of the preparatory scho boys, dull and clever alike; so that its pose—as the Blue-book proves—is to te and Greek, as much time being devote jects other than these as the conditions

I should have liked here to quote article in the same Blue-book by the pres master of Eton, on "Entrance Schola Public Schools and their Influence on Pr Schools," in which he describes the this competition as "very disastrous have said enough, I think, to show tha paratory-school curriculum is vitiated b imposed upon it from above, which is t not the well-educated but the special This is the condition of things agair preparatory-school masters, through th mittee, have been protesting for the last years. They have urged again and ag increasing unanimity and force, that th culum is overloaded, and that early spec is bad for all boys, whether they have ability or not; that the curriculum "s wide rather than special, and should ai veloping the faculties in due proportio it should be "arranged on principles ad the average and not to the exceptional b their annual conference in 1902 they ag a majority of more than three to one, " settlement of the curriculum will be sat to this Association which imposes on yo the rudiments of three languages besid own"; and on a poll of the Association solution was confirmed, again by a ma more than three to one. And in Februa their committee instructed delegates to conference with the headmasters of publi "to make the omission of one languag sential principle in the discussion of the lum."

It is difficult to see what more the pre schools can do at present to lighten the that oppresses them. They would rejoi conference and co-operation with the schools they could bring about the refor desire. But tradition, so far, has been to for them. They cherish the conviction, h that many public-school masters, and all sire that scientific method should be applie secondary education, are in sympathy wi aims. Meanwhile, the closeness of their with the Headmasters' Conference is e by the fact that a standing Joint Commi recently been appointed (it has not yet consider questions of common interest kinds of schools, especially the curricul functions however are, it is understood advisory only. The difficulty is to arriv

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

t as to the *principles* that underlie early
Even the term "common" as ap-
he entrance examination is misleading;
ublic school reserves the right to choose
ıbjects. Most of them, *e.g.*, make both
se and nature study optional; at one
ıd distinguished school, English history,
y, French and English grammar, Ger-
ek composition, Latin verse, and nature
all optional. Where then is the driv-
r, necessary to carry out reforms, to
n? Is it a mere dream to hope that a
on of high authority may some day do
lary education in England the same kind
as the Committee of Ten rendered to
l States in 1894, by revising it on scien-
ples?

ndulge for a few moments in the dream
a Commission had reported, and con-
blic opinion that all specialisation is a
ntil the age of sixteen or seventeen; that
ducation should be of a general kind;
ın examination should be framed, to be
sixteen or seventeen, success in which
en the door of all the professions, in-
hat of commerce, and also of the uni-
Early specialisation would cease, and
ratory schools would be placed in their
natural relation to the public schools as
n which the requirements of young boys
aching best fitted to develop their acti-
ıe right order would be alone considered.
of the classics, as an essential part of
aining, will not suffer in the long run if
ast to the great law, true of educational
other growth, that "that which is in-
the best in any particular stage of
ent is also the best preparation for that
nes after."

vould be "intrinsically the best" in the
ry-school stage? Religious and moral
physical training, practical training of
and—on these, I take it, we shall all be
What of the literary training? I begin
uages, which rightly claim at this stage
ge share of the curriculum.

UAGES. A. *English.*—The crying need
is better teaching of the mother tongue.
admits that the average schoolboy is
inarticulate, limited in his vocabulary,
to good literature. The reason is that
as an independent subject, has been
owded out of the curriculum. We have
ersuade ourselves that it can be taught
actice of Greek and Latin composition
slation. But results have thoroughly
d this plan. What is wanted is more
r teaching of (1) English composition,
nd on paper; (2) English literature, not
to hang notes upon—the fewer of these
—but to rouse a boy's admiration, to
is imagination; he should read a great
read for enjoyment. We have much
in this matter from both France and Germany; and one of the advantages of being trained to teach is that the student is made acquainted in the process with the best that is being done elsewhere in this and other subjects of education.

B. *French.*—Side by side with English, the boy should be learning from the first a foreign language, French. Childhood is the time when languages are most easily and naturally acquired. French, on its own merits as a school of clear and precise expression, is the best complement to English; and it forms a natural introduction to Latin. What we need is a large increase in the supply of Englishmen competent to teach French as it ought to be taught—to speak it fluently themselves, and to ensure correct pronunciation from the first. But, in any case, the "intensive" method, one at a time, is essential to thoroughness and success. If (say) ten lessons a week could be allotted to the subject, it ought to be possible to begin Latin after a year and a half or two years, reducing French at the same time to the lessons necessary to maintain and improve the ground already won.

C. *Latin.*—I am a hearty believer in Latin as a mental discipline, apart from its great historical value; and the fact that generations of schoolmasters have been gradually improving it as a teaching instrument gives it an overwhelming claim to a place in the curriculum, as soon as it can be introduced without injury to scientific method. Granted that the French teaching is efficient, I do not see that Latin need be postponed (as in the Frankfurter Lehrplan) to the age of twelve. But once begun, it should take us, with French and English, to the end of the preparatory-school stage, leaving Greek and German to be taught entirely at the public school.

II. History and Geography.—Everybody agrees that these should be taught in the preparatory stage; they are indispensable on their own account, and they are important aids to the teaching of English. There is no better prose reading for boys than the lives and achievements of the great men of our own and other lands. What is wanted, especially in the case of history, is a survey of the secondary field to determine what amount and kind is best in the preparatory stage as a foundation on which first the public school and afterwards the university should build. At present every preparatory school goes its own way, and the study of history suffers all along the line from want of any continuous policy in the lower stages.

III. Mathematics.—I need not dwell on this most necessary element in the curriculum. The teaching of geometry has lately been reformed. Where teachers fresh from the universities generally fall short is in ability to explain simple processes in arithmetic, and this is one of the essential things that training should give them.

IV. Nature Study is beginning to take its rightful place in the preparatory schools. This is

largely due to the admirable syllabus of nature-study work which was drawn up in 1904 by a committee of the Public Schools Science Masters' Association; partly also to an address to the Preparatory Schools Conference in the same year by Mr. O. H. Latter of Charterhouse, who explained the reasonableness of the syllabus and its great practical value in training a boy to use his eyes. Mr. Latter pointed out the difference between a lesson in science, which appeals to the memory, and a scientific lesson, which is a step towards the acquirement of scientific methods and habits He showed how nature study trains a boy's ingrained curiosity, leading him on to experiment and research in all kinds of subjects on his own account; and how the use of a notebook to describe what he sees helps other subjects, such as drawing and English composition. What proportion of candidates for entrance at the public schools last month offered nature study I cannot say, for thirty out of the thirty-seven schools make it an optional subject; and as it cannot therefore affect a boy's place, we may conclude that at these schools he would not offer it, even if he had been taught it. At Charterhouse, where it is required as an alternative to Latin verse, the proportion was about 30 per cent. of the candidates; and Mr. Latter tells me that, so far as he can judge, the work is being done on the lines recommended by the syllabus already mentioned. For nature study of this description there would seem to be no special scientific training *necessary* on the part of the teacher. What is necessary is personal keenness—the enthusiasm for the subject which, being itself interested, makes boys so too.

And this leads me to one final recommendation of a more general kind on the subject of professional training. The teacher in this first stage —the preparatory stage of education—is faced by problems of the most difficult and responsible kind. Here, even more than in the second stage, he needs all the light that psychology, or educational theory, or the practical experience of others, can give him. And to have been trained in method —in the habit of so preparing his work that he knows exactly what and how he is going to teach when he enters his form-room—must be of the greatest possible service. But subjects and standards at this stage are necessarily elementary, and the teaching of them may easily become a "sad mechanic exercise." Therefore, if only for the sake of his own intellectual self-respect, I should like every master to have, besides his form-work, some special subject—a hobby, if you like—be it nature study or geography, or drawing or handicraft, which would keep his enthusiasm alive, and of which he should be a chief exponent on the school staff. No training will be complete which does not make provision for and encourage at least one such special subject. The teacher, as well as the pupil, should aim at the highest development of which he is capable.

THE CURRICULUM OF THE PRI SCHOOL.[1]

By ARTHUR BURRELL, M.A.
Principal of Borough Road Training College, I

THE balance of the curriculum in a school is inextricably connected massing of the work. Before w its proportion of hours to history, carp speaking, we have to consider in what m several subjects are treated. I am not of correlation. The teacher who sets a map of India, and follows it up with a b of Clive and a repetition of the Pipes now, is correlating work, a procedure n ciated by the class, valuable though son think it to be. The teacher who, with model before him, or using a lantern, d series of lessons with climate, flora, ex conquest, history, biography, and pre blems, is massing work, and any intellig can understand the teacher's logic. In relation the various items may fall int masses. In the massed work everythi its place.

The massed work of a primary school six important groups (I am not speaking schools, in which there are seven groups) first, the basal, and the most important the physical work.

The true physical work of a primar means something much more than a mo drill, native or imported (imported for pre carried out by steaming children in thic on an asphalted or puddly yard. I sup day is distant when an easy, light sch will be in school-hours compulsory, further distant is the day when, along change of dress at 9 a.m., will come a dip in a school swimming-bath. But fre move in one's clothes and a sense of cl are the bases of true hygiene. As yet it not. Lessons on hygiene, talks on ph are good enough if there is time for th the lightly dressed, clean child and t ventilated class-rooms in which children *breathe, and have their being*, are the bes we can give. As yet we have them not. pose everyone here has attended educatic ferences, deputations, meetings on health, every principle of health was calmly disr Mark Twain tells us of one church cho behaved itself, but he had forgotten it In like manner I remember one confe which the windows were open. I k name. It was at the Home of Education side. We openly disregard what we p believe in. No man of science has, I bel found an easy way of telling a teacher is teaching in impure air. Allow an un person to suggest that primary-school wo improve all over England to-day if once, in every lesson a caretaker should open t

[1] A paper read before the Educational Science Section o Association at its meeting at York, 1906.

and, by exhibiting a ticket, report on
f the air in the room.
physical work is more than this. We
llowed to put games and swimming in
ible. There is no mention yet of box-
gymnastics, and athletics. No pro-
ade, no suggestion is made, for some-
ch is more important than the well-
xpensive building. I mean, of course,
-field centre. Until local authorities
led to provide a levelled grass field for
within a certain area, the physical
the primary-school boy and girl has
hought of. The Board of Education,
of burning common sense, written
ignature of Robert L. Morant, has
t what ought to be done. It has shown
playing-centres may mean in the de-
of the boy and the school, physically
y; but the way to provide these is not
red. What has been long regarded as
ssity for all secondary schools has been
hheld from the primary-school boy as
belonged to a different order in crea-
no Almond of Loretto has arisen per-
l practically to plead his cause.
the physical work is the mass which
tool-work. A tool is an instrument
rtens labour and asks for skill. The
fascinating; all children love it; with
. Tool-work is infinitely more than
ining; it is more than hand and eye
is the definite *study of the use* made
l man of the pencil, the pen, the com-
scale, the balance, the jack-plane, the
he saw, the soldering-iron, the needle,
and a host of other instruments. A
nd of mine arrived home from school
m the gardener a disused bicycle, dis-
is own, which was not high enough,
purchased article, tightened, scraped,
d rode the renovated machine the same
came from a school where boys are
use of tools as a means, and all the
fitting, cutting, and decorative power
been brought out and increased. He
our language, turn his hand (the best
world) to anything.
e tool-work comes the geographical
is, of course, the largest mass. It
e application of a good deal of tool-
demands the scientific study (ele-
f course) of climate, and the results
; it requires abundance of illustration
of the table or garden-map, the lantern,
ustrated newspaper); it asks for read-
ks of travel and books on the develop-
mmerce, and to it are appended history,
and the daily or weekly newspaper.
. B. George says: "History is not
geography; history *is* geography." I
e primary-school boy has as yet had
of what geography means—this huge
ich almost everything can be referred.
ke, here, if I had even one minute to spare, to plead for a radical change in our history teaching, and to plead for a little world history; but I cannot stay to touch on it. At the risk of being thought one more *laudator temporis acti*, I may say that I believe, from what I can hear and see, that geography and history teaching has of late years not been improving.

The mass known as English work calls here for one commentary, and it is this: that the problem of the school library has not been faced. Up till now—I speak of primary schools as a whole—the boy is not allowed to read books: he reads readers.

On mathematical work one word must be said. I suppose anyone suggesting a diminution in mathematical work will be labelled as retrograde. But vastly improved as our methods are, no one is satisfied with the result, and mental mathematics, as opposed to the laborious setting down of figures, has, even as a discipline, not received in modern days its share of attention; while I, for one, cannot see on what principle it is wise for a boy of eleven, ignorant of the outer world, unfascinated by all history and geography, and unable to do anything with any tool, should be encouraged to rattle off trigonometrical formulæ. Surely in elementary mathematics there is scope enough for the most enthusiastic mental disciplinarian.

Out of a possible thirty-two lessons, it seems to me that the geographical mass should receive eight, the physical work and tool-work six each, the English work and the mathematical work five each, and the singing and speaking two. It must be observed that throughout the work oral description, oral composition, and exact oral phrasing *on the part of the child* should be largely increased, and that while time may be saved on mathematics and grammar, more time should be given to the geographical, the tool-work, and the care of the body. No water-tight compartment need be fitted up for that moral instruction, which, beginning with the teacher's own person and own example, cannot be excluded from any lesson which is properly and faithfully given.

If I turn now for a minute or two to our training colleges, I would like first to say that no one who knows the great colleges has any doubt as to the admirable quality of the greater part of the teachers who come to them and from them. I shall not be misunderstood, I hope, when I say that we have not yet hit upon the method of excluding the unfit. Although the pupil-teacher may pass many examinations, and although he is sent to the training college with the Board of Education's imprimatur riveted firmly on to him, he is in many cases a person who is unfit, who will always be unfit, physically, intellectually, or temperamentally, to stand before any class, or to instruct or train any child. The whole history of education, from Aristotle to Arnold, tells us that a school is not made by its buildings and by its laboratories: it is made by its teachers.

It is obvious, to begin with, that the would-be teacher should have passed some examination as to his general knowledge and fitness long before he comes to a college, and that such examination should demand positive physical qualifications from one who is setting out for an arduous life. Except in the case of the minority, who will, under any set of rules, look after themselves, I think I may say, without fear of contradiction, that among persons sent up to training colleges, practical hygiene is ignored. It is *this* which, from the age of fourteen onwards, I would like to see put in the place of a great deal of our bookwork psychology and our theories of education. It may be that compulsory medical inspection of schools is coming—I hope it is—but it is to the teacher that what I may call a medico-ethical training is of such vast importance. Your doctor drops in once a week to detect diphtheria or chicken-pox. Your teacher is standing, hour by hour and every day, before cases of weak sight, incipient deafness, malnutrition, and atrophy (moral, as well as physical and intellectual), and is faced with problems arising from the evil home. The children of the decent poor pay, in many cases, heavily for our *theoretic* bookwork, unsupported by definite knowledge of facts on which doctors and psychologists agree.

I need scarcely say that, though our material is in many cases admirable, our tool-work in the colleges is, in one respect particularly, a mockery. I allude, of course, to the subject of drawing. It is not as if we had not been warned. We know that four times as much study as we give could be given to drawing, and yet we should not have too much. The immense advantage of even moderate skill at the blackboard is acknowledged by all, and yet it is neglected in favour of the calculus or of Greek.

It is precisely the same in regard to the geographical work and all that it means. Wide reading, the study of the art of oral description, appreciation of modern problems—to all of these we give, and have to give, the go-by; while as for English literature, it seems little short of ludicrous that, having neglected it for thirty years, we should be astonished that we can find no teachers to deal with it satisfactorily.

The training college is not to blame; the teacher is not to blame. He has worked hard and continues to work hard, but, look where he will, he can find no scope for his powers, no goal for his ambition, except in a scheme of study which is manifestly unsuited for his work in a primary school. If we choose our teachers well, if we put before them something to work for and give them their reward when they have worked for it, we shall have no cause to complain. But until that is done, people will go on wondering why it is that the results of the primary schools and the training colleges seem unsatisfactory.

I am quite aware that the primary-school teacher, if he heard me, would not, perhaps, recognise my words as those of a friend; but I believe that if I had fifteen hours allott instead of fifteen minutes, he would, rate, be ready to consider whether or nc be well for him to get out of a groove i he has been driven, and in which he is ously spending his days.

EXAMINATION AND INSPECT

By Prof. HENRY E. ARMSTRONG, Ph.D., LL.

"We in England have become so completely s and pickled in these examinations, that we n our natural intelligence in judging of them. them for granted and never or rarely inquir effect on the human mind."—*Warde Fowler: Correspondence of* 1903.

I ASK to be allowed to sound a note ing with reference to the effect aminations and inspections may h higher school system unless great care and ideals are formulated very diffe those which now prevail—if indeed any be said to prevail.

Whilst the burden of examinations removed from the elementary schools– ately only when the system had done its and degraded teaching to an almost r routine—both examination and inspec likely to become more and more domina in the life of the secondary school. Al country, the schools are sacrificing thei for a money bribe, in exchange for County Council grants. It may easi that the secondary schools are affecte astrously as the elementary have beer warned we are not forearmed. The which we are fallen is well shown b that *English* teachers have greeted witl the suggestions for the teaching of *E* the list of "classics" issued by the Education—which, however, has not ciated the paramount need there is in first encouraging a love of reading and c the true art of reading before studying any kind. The schools are allowing to dictate exactly how many hours are voted to this or that subject. Sylla being asked for in every subject. Board of Education does not legislate, come in with annotated text-books. N could be conducted under such servile c

A free people should have free school which are free to develop individuali which teachers exercise freedom of Nothing seems to me so necessary to as this in these days of preponderant i It is sad that a free people should its part with freedom—but such is bound effect of the spread of liberal ideas, notwithstanding Herbert Spencer's war

It rests with the schools to maintain free. But there is little evidence that astic profession is in any way aware c

[1] The substance of a contribution to a discussion in Science Section of the British Association at its meeting at

alls upon it—of the glorious opportunities
. Consider how the chances afforded by
eetings are being wasted: how few re-
tives of the profession there are among
achers, it may be said, are too tired to
But that is not the explanation. If re-
tives of the other sciences can come
, surely those of educational science may
expected to make the effort in a really
way. I regard Canon Lyttelton's defec-
significant: he is typical of those who do
these matters seriously to heart; typical
lves, who are only beginning these past
rs to discuss educational problems seri-
understand that we must organise.
deal system would be for the schools to
themselves, with the aid occasionally but
eans regularly of competent assessors—
at as is done in Germany: always recol-
that, after all, you cannot examine for
really valuable in school work—that the
luable of its results come to the surface
adually and in later life. We are not
undervalue knowledge in the future—
ontrary we shall demand and secure more
e of it—but we are going to set chiefest
discipline and character: not that char-
oken of on every possible occasion by
s of our present public-school system,
oo often finds expression in a slavish
f fashion and the supreme disregard of
ho are looked upon as social inferiors
our president alluded yesterday; some-
r wider, real insight, a deeper gift of
y, will be recognised as character when
ent narrow system gives place to true
culture.

unately the teaching profession is not
f-respecting profession in our country—
nse that it does not claim recognition as
important of all the services. Surely, if
make the man, no class of men can be
importance to us than the teachers: that
uld be the worst paid and least considered
public servants is nothing short of proof
have as yet no clear conception of their
. But those who decline to accept full
ility and behave as slaves cannot expect
ated as patriots.

the consultative committee of the Board
ation about three years ago produced a
or the examination of schools—practically
leaving examination—involving the par-
of the teachers, the almost universal
: "For Heaven's sake, don't ask us to
ny responsibility. Believe us, the public
st us; it won't pay us to be trusted"—
silent thought in the background. The
ies with examination agencies bestowed
ise upon the scheme—fearing that they
se fees if it became law: one going so
state this openly. Receiving such scant
ement, the Board of Education has re-
spineless to the present day. A great
ity has been sacrificed.

The question is one of deepest importance to the country at large. The public love examinations, worship them in fact—glory, the mothers especially, in the performances of their dear boys and girls and congratulate heads of schools on their successes as though they were evidence of good teaching; they little know that the goodness consists in the cleverness with which teachers spy out the nakedness of the limited area wherein the examiners dwell. Years ago the *Pall Mall Gazette* put forward examination successes not, as they really are, as the measure of its soul-destroying power but as the true test of the efficiency of a school. It is not sufficiently recognised that any system of examination may be made the means of grading ability of a certain kind and that, within limits, of course, any examination, however bad, will test the powers of a particular set of candidates. But such examinations afford no guarantee of a sound education. Nearly all our examinations do little more than grade the candidates in rough order of merit with reference to the particular test applied but give little or no proof of real merit. Except in the case of certain honours examinations, the results-coat is cut to fit the cloth: a certain proportion must be passed in order to maintain the popularity of the examination, if not to select the required number of applicants for vacancies. If examiners were honest and marked according to deserts, the slaughter would be terrible: but the commercial element comes in and good examiners are forced to pocket their consciences; fortunately, in most cases, it is only too clear to them that the teaching has been bad, and feeling that it is unfair to punish the innocent too severely on behalf of the guilty, they allow a considerable proportion of the innocent to escape: to save appearances, however, some must be sacrificed.

Most of the examining bodies are purely commercial undertakings—it is absurd to think of them as serving any altruistic purpose; examining is a remunerative business. Examinations serve the purposes of the schools as a means of advertising. If we are to continue them, they must be put into competent hands, they must be much simplified and they must be honestly conducted: honest questions must be set, marks must only be awarded to honest answers. Our present system encourages dishonesty at every turn: examination is a game between rivals, not a test of true education.

The one useful purpose outside examinations can serve is to direct and improve the teaching. Our universities are claiming more and more to hold examinations for schools and the public think that the examinations are directed by the universities: but this is not the case. The university exercises no effective control but merely deputes a certain very few persons to do the work. Dr. Gray of Bradfield threw light on the system not long ago and showed that it was pretty much a one-man system. No excuse can be found for examinations serving commercial ends, by outside bodies, of schoolboys and school-

girls, unless they are placed in exceptionally capable hands—in the hands of people who understand boys and girls and their requirements and who are, in some measure, competent to lead the teaching. But I go so far as to say that no examinations should be held except in co-operation with the schools; otherwise, the interference is disastrous and destructive of all true teaching. Take as an example the following passages from a letter which I received a few days ago with reference to the Oxford Local Examination for Junior Candidates in Chemistry and the Oxford and Cambridge Schools Examination Board Examination in Chemistry for Higher Certificates. "Would you be kind enough to spare a few minutes in looking through the enclosed questions set to boys this week. I try to make our course thoroughly experimental but can scarcely continue in the face of papers such as these. In each paper 50 per cent. of the questions deal with matters of abstract chemical theory, which to my mind is unfitted to children, at any rate to those under sixteen. Perhaps it can be forced into them but it cannot be taught to them in a rational manner. Of course the headmaster wants *results*. They can only be produced by forsaking what one knows to be the proper methods of teaching chemistry."

My attention was directed to the unfitness of the same higher certificate paper by another correspondent a few days later. Papers such as those submitted to me are absolutely destructive of all true teaching in schools—obviously they have been set by people who have never given themselves the trouble to think what boys and girls should and might do there.

The harm that is being done by examinations is incalculable. Thus there is little doubt that examinations are selecting out for the public service a particular type of individual and that not the most valuable—persons who are more or less acquisitive rather than those gifted with critical and constructive power. It may be that an explanation is to be found in this direction of the "inexcusable carelessness and extraordinary ineptitude" and "the want of intelligence that is deplorable" among War Office officials just complained of in the report of the Royal Commission on War Stores in South Africa. That they have given us a class lacking practical aims for the service of the schools, there can be no doubt.

It has long been recognised that the scholarship examinations at the universities set an altogether false standard in the schools; the evil is becoming greater every day now that the schools are forced into competition with the colleges. The preparatory schools are thrown out of gear by the entrance examinations to the upper schools. A new terror has been introduced of late years in the form of County Council scholarship examinations. Until all these interferences are removed, it will be useless to contemplate the introduction of balanced curricula; continuity of study will be impossible.

A radical change in the system must t
if examinations are to be continued.

However good inspection may be in
it is easily overdone. One bad effect it
will be to relieve heads of schools of
of responsibility which should always
them: if inspectors find fault, teacher
sacrificed; if they do not, it will be tho
all is well. The time will soon come
stead of cannon, teachers will have
to right of them, inspectors to left of t
fairly incompetent ones too. Again, let
out how little the inspectors did to r
elementary schools—how few among t
tested in any effective way against th
which were rife in the schools—how re
been forced on mainly from outside.
expect much more from secondary insp
a body? Among them there are not a
men; but what opportunity is given to
leaven the mass? That incompetents m
greatest harm is clear when it is rememt
women teachers especially tend to han
inspector's every word.

I do not propose to discuss the matt
tail; to do so would be to raise too m
tions and to encumber discussion. But
urge broadly that something must be
organise inspection and examination
force inspectors together, to force exan
gether, to discuss the principles on wh
should proceed; to give opportunity fo
change of opinion and for the discussion
ideas and conceptions of progress. N
the kind is attempted at present. The
Education is nothing if not a follower
—although sometimes after a very long
therefore, taking a leaf out of the repor
by our president, the Board has counsell
spection of areas rather than of single
The change will be welcome if it have
of introducing the needed element of br
our system. But all inspection will
less unless it be made constructive.
persons who are fit to be inspectors are
can take their coats off and do the w
selves, knowing how experiments are
having learnt to think for themselves:
both how to initiate an experiment an
carry it through all its stages.

To find fault is useless—we are all
more or less: what we want is light
our darkness. I plead therefore for the
of the young man from the univer
turned-up trousers, the sign of lack of
think independently—I meet them
among inspectors—and the substitutio
inspector-missionaries who will carry
the heathen paths of our schools. A
men exist and others may be trained in
The Recorder of our section is a brilliant
The value of the pioneer work which
London elementary schools has been r
by me before to-day: the best proof of

the fact that it remains unappreciated
ay. But in Ireland he has done an even
work, particularly by showing how in-
may be trained. He must tell the story
nd speak of the results. What I wish
out is that the experiment has been tried
e scale and with great success.

be long ere the universities are suffi-
eformed to give teaching such as is re-
make men and women effective teachers.
le, we may do much, if we select the
and women among us who are capable
as inspector-missionaries and send them
he teachers. I know from long experi-
there are many really able teachers who
equire a few words of advice and en-
nent to make them highly effective.
provement of education is largely a ques-
rganisation: if we can but organise, we
ceed; our difficulty is to believe that we
of us quite ignorant in these matters
we might gain much by working to-
nder the guidance of the few experts we
t present, we allow fads to prevail; one
llows the other but no common purpose
Just as we were beginning to establish
system of elementary experimental
nd method was beginning to take its
the schools, the craze of unmethodical
tudy came on the field; now, physical
is to the fore; something fresh will
-morrow. There is no fixity of purpose
cause we are so unscientific.

TEACHING OF MECHANICS BY EXPERIMENT.[1]

By C. E. Ashford, M.A.
aster of the Royal Naval College, Dartmouth

OST all the developments in the methods
f teaching the physical sciences, me-
hanics is only just beginning to be
So far as public schools are con-
this is probably due to the fact that
or generations in the hands of mathe-
masters, who naturally treated it as
ive, not an inductive or experimental,
Given the principle of the paral-
of forces and Newton's laws of
they trusted confidently in their own
tical powers for developing the science
foundations. It would have implied
g like a slur on the power and accuracy
matics to appeal to experiment, and this
as so strong that no stress was formerly
the experimental basis even of the laws
ciples on which the science was built up.
sult was an elegant and rigorous treat-
the subject, which formed an excellent
so far as it went, but which lacked in-
d left unattempted what is perhaps the most important result of teaching a science properly.

When experimental science was thrust into the school curriculum through the pressure of outside opinion, the introduction of the masters who taught it did not modify this one-sided treatment, for it happened that these men were for the most part chemists. For many years science and chemistry were synonymous in schools; most of the specialists in chemistry were not unwilling to be relieved of the responsibility for teaching mechanics, and the subject remained a part of the mathematical course, usually learnt only by the better mathematicians.

With the advent of the physics master came strong pressure to develop the experimental side of mechanics; this has been done in many schools, but hitherto it has been subservient to the mathematical order of treatment, designed to illustrate and perhaps to verify the results deduced by other processes. No attempt is usually made to attack the subject inductively; the apparatus is merely the text-book diagram in three instead of two dimensions. In addition to this, the experimental treatment is practically confined to statics.

If we turn to the other group of schools which is engaged in the teaching of mechanics, the technical schools, we see exactly opposite methods. There mechanics is treated frankly as an experimental science; the pupils learn much that no public-school boy derives from his work in class-room or mechanical laboratory, but often miss the special training given by the public-school course of mechanics.

Is it a Utopian ideal that these two lines should converge, and in their junction should admit of the development of a method of teaching mechanics which will provide for the three desiderata, a knowledge of the facts and principles of the science, a strengthening of the reasoning power, and a training in the proper way to study natural phenomena in order to fathom the underlying causes? I believe that this can and will be done.

The recent reforms in geometrical teaching show that mathematicians have realised the great value of a preliminary experimental course even for the most crystallised of the deductive sciences. The same process must be adopted in the early training in mechanics; this has to some extent been done, but the difficulty here is that the methods must be different. What is needed in this early course is the influence of the engineer with his experience of actual practice, not that of the schoolmaster with his traditions of text-book toys and models. It is difficult to say how much the schoolmaster and the schoolboy owe to Prof. Perry in this matter. His insistence on the necessity of starting by an investigation of actual machines has already begun to influence school teaching, and the course he advocates is exactly what is needed to form the foundation on which the mathematical master may build, as well as to supplement the course he gives.

I should like to mention here an interesting

[1] address delivered at a joint meeting of the Physical, Engineering, and Educational Science Sections of the British Association held at , 1906.

attempt to combine some of the features of a technical and a public school.

The Admiralty has established colleges at Osborne and Dartmouth for training naval officers. Now, the naval officer has to be a many-sided man, and not the least important side is that of an engineer. It is of vital importance that his engineering should not be merely book-learning; he is a man of action, and a large employer of skilled labour, in a ship that is "a box of engines." Hence he must receive a sound practical as well as theoretical training in science and in mechanical and electrical engineering. The problem of giving it to him is complicated by the fact that due attention must be paid to many other sides. We may neglect these for the moment, but they must not be left out of account in arranging for any one branch.

In the ordinary process of training engineers both a college course and a workshop course are essential, and much discussion has taken place as to their order of sequence. The Spartan *régime* of evening classes following laborious days at the bench is now recommended for the Admirable Crichtons, and this with important modifications is adopted for all naval officers *in statu pupillari*.

It is not the custom for great engineering firms to arrange their establishments solely with a view to the most rapid progress of their premium pupils. They own workshops, not educational establishments. In a workshop which *is* an educational establishment very many hours may be saved without detriment to the shop training. These hours may be employed in carrying on concurrently the scientific as well as the general education, thus providing that excellent recreation, a change of occupation, and making it possible to ensure that the chain of subjects taught, from the most technical to the most humane, should be a true chain, with each subject linking into and depending on the next.

During the whole of their four years at Osborne and Dartmouth the cadets spend a part of every alternate working day in workshops, in charge of trained engineers, not schoolmasters. Considering for the moment only the effect this has on the teaching of mechanics, it will be seen that for any mechanical principle which they learn from masters in the lecture-room the cadets see many practical applications the next time they go into the workshop. Again, they come to the lecture-rooms with a store of practical knowledge of machinery and materials on which the lecturer can base his teaching. There is available, too, a storehouse of knowledge on which the mathematician can draw for his examples, preferable in every way to the problems on finance, clocks, and adulteration of grocery which used to swell the text-books of arithmetic and algebra.

It is evident that these conditions are very favourable for carrying out such a plan as I have suggested, of building up a logical and mathematical superstructure of mechanical knowledge on the foundations of an acquaintance with real machines and processes. It would not b for anyone connected with this building to attempt to estimate its success, but I n attention to some of the points which h gested themselves as important in the l and lecture-room teaching of mechanics as possible under more ordinary conditio

I may say at once that I have no with the fashion for teaching boys ki an introduction to statics. It is a hi venient sequence in which to develop t for anyone who already possesses a gene ledge of the whole, and may commend the metaphysician, but it does not do ordinary boy. The latter finds it easie about and to experiment with bodies moving with a small uniform velocity. with a good working idea of a force; it time before he is anything but hazy ab celeration. To his mind a force is chi pied in preventing motion or in keeping uniform motion against a resistance; perience uniform acceleration is rare. to suggest that it is comparatively ra experience of most of us, and that we ence of this in the continual harping of t on bodies falling freely and trains g speed.

I believe that most boys in their heart always believe that a body loses its wei falling freely. How, then, does he gras of a force producing its acceleration? inquires how sundry great principles established, he is referred to a planet dulum, of which the acceleration is none stant.

Assuming that we begin with statics, use the boy's own muscular sense and e to give him the notion of force. But balance must be called in to help him quantitative experiments. He will lear first from a lecturer, but will need a goo guidance in the interpretation of his exp He can easily rediscover and verify to satisfaction the parallelogram and tri forces. It appears to me to be a perfec compromise to let him rest content a verification, warning him that it is not but that he will be able to prove it wh apply the laws of motion; and when la has grasped these and perhaps unders we trust them, we can bring him back him a rigorous proof. This is only a fir intended to give the learner vivid and ideas, and to give him a chance to use ing instruments as well as his imagin powers of analysis. I do not suggest t the foundations have been well and truly superstructure should not be erected to the traditional methods; I believe th modernising tendency of the technical sch lies a serious danger of forgetting thi making no provision for a proper study advanced mechanics. The same danger guarded against in the revolution that

n the teaching of geometry; it is to be that the influence of the public-school will effect it in mechanics.

verage boy's knowledge of the mechanics yday life will make lectures on levers and nent of a force easy and interesting. The o which he can deal with energy depends

perform and understand. He employed a long trolley carrying a strip of paper, which was marked in transit by an inked brush on one end of a spring rigidly clamped at the other end. This spring vibrated about eight times a second, and gave an easily measurable trace on the slowly moving trolley (Fig. 1).

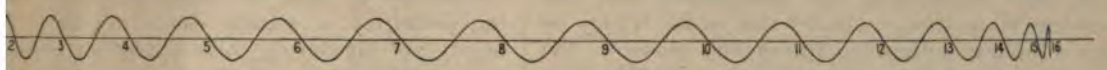

FIG. 1.

amount of science he knows already, but have no difficulty in comprehending the work and its measurement, when illus- with actual machines. He can early ex- t with such machines as a screw-jack, nd tackle, differential pulley-block, or ack. Working with these will make him nd he will do it cheerfully because he is with actualities, not toys and models, ause he can reduce his experiments to a hich when plotted on paper will tell him worth knowing.

the ordinary school course omits this most nt and interesting part, which probably a boy more real mechanics than all the rest. nately, school laboratories are stocked gant models of these machines. The scien- paratus maker sends his lists to schools: er of tools does not: and that, I believe, is cause of the fanciful nature of the me- l apparatus still to be found there. Curi- hough, the model not infrequently is more han the genuine article. To take an ex- the list price of a wooden model screw ientific instrument maker is 15*s.*, that of working model of a screw-jack is £2, list price, of a maker of the commercial is 6*s.* for a 1½-ton jack. But I believe that choolmasters would think it as unreason- order some heavy weights and half a dozen acks as to order half a dozen locomotives ratory use. It is hard to break away from ss-cased balance and the feeling that a lweight is out of place in a well-conducted ory.

perhaps the most marked feature in the of mechanics is the lack of experimental ions of kinetics. The whole of the earlier f kinematics and kinetics usually consists eals to a boy's imagination and mathe- reasoning powers, eked out by references e few phenomena of daily life, with per- exhibition of Atwood's machine and the m.

ers know only too well that, from the f view both of theory and practice, At- machine is not well adapted for boys'

tly Mr. W. C. Fletcher put into prac- pe some experiments which any boy could

Of course, there was nothing really novel in the idea, but the novelty lay in its adaptation to the needs of a boy in a laboratory. This constitutes its great merit, and however roughly it be made (if a fairly true plane is provided for it to run on), a boy can get with it results correct to 2 per cent. or 3 per cent. after he has made the adjustments necessary to eliminate the errors which he can see and guard against. It does away almost entirely with the difficulty of timing the motion of a body. Consequently, since the same apparatus suffices for a number of experiments, and is not costly, no one should now plead poverty for leaving his boys without the means of illuminating by their own experiments a very difficult subject.

I propose to give a list of some few of the uses to which Mr. Fletcher's trolley can be put. I feel some shame in doing so, since it suggests that I am responsible for them. As a matter of fact, all that is new is entirely the work of my colleagues at Dartmouth; I have only been an interested looker-on. One remark applies to all: they are designed for use by the boys themselves, and have been extensively so used; they are not mere lecture-table instruments.

The diagram (Fig. 2) shows one of the or-

FIG. 2.

dinary trolleys on its plane. With this a boy can produce and measure uniform velocity and acceleration. Every experiment with a trolley provides him with a space-time diagram ready made,

and he can plot his velocity-time and acceleration-time curves from it. He can easily discover that with a constant force the acceleration varies inversely as the mass, and that with a constant mass it varies as the force.[1] With a suitable trigger (Fig. 3), holding a pin on the trolley, and actuated by the spring in the middle of its first swing, he can get the motion from rest, thus simplifying his calculations and improving his curves. The friction of the trolley he can eliminate either by tilting the plane to the necessary angle, or by attaching a weight that will just maintain uniform motion, as shown by eye or, still better, by a preliminary tracing with the spring. The friction of the pulley over which the thread passes cannot be compensated, so that it is necessary to use a good pulley.

The objection to all such experiments on forces and accelerations still exists, that a boy may feel that the accelerating force may be lessened by the fact that the weight is falling. Of course, he adds the mass of the weight to that of the trolley,

FIG. 3.

so that it is not a real error; he may be able to grasp this, and in any case the velocity acquired is so small that it is not likely to present itself as a difficulty to the ordinary boy.

If a long spiral spring be fixed to one end of the plane, and the movement of the other over a scale of inches be observed as the spring is stretched with different weights, a simple indicator diagram in the shape of a triangle is obtained, from which can be found the potential energy stored in the spring for any extension. If the free end of this spring be then attached by a thread to a loaded trolley which is pulled back, on releasing the trolley and finding its final velocity, and hence its kinetic energy, the equivalence of this to the potential energy of the system, as previously determined, may be shown.

If two trolleys are set side by side on a gently sloping table, and carry a board set at right angles to them, along which a third trolley can be dragged by a falling weight, it is easy to see and

[1] See W. D. Eggar's "Mechanics" (E. Arnold)

measure the composition of two acce
The third trolley may carry a brush whi
a straight line on the table.

With two trolleys on a long plane, eac
vibrating spring, one moving and the o
ally at rest, he can verify the law of co
of momentum, both for trolleys that stick
and for a pair that rebound. If a pisto
on one and a target on the other trolley,
the pistol by a simple electromagneti
ment, and measuring the momentum pr
each trolley, the same law can be sho
true for the recoil of a gun (Fig. 4).
necessary to say that this is a popular e
with boys; it is also easy to make it a

With a plank pivoted about a vertical
carrying a strip of paper which can b
by a vibrating spring, and an ivory st
can be struck by a similar stud on the
ordinary trolley, a boy can measure th

FIG. 4.

momentum of this trolley on hitting t
He thus can find the moment of the blo
plank, and can compare it with the m
momentum acquired by the plank, thu
the moment of inertia of the plank abou

If he attaches a thread to each en
trolley on a long plane, passing thes
over pulleys on the ends of the plane,
ing to each thread a heavy chain the
of which is hung from the plane so
chain forms a U, the trolley will move w
harmonic motion if disturbed (Fig. 5).
tice friction must be eliminated by t
plane to the required amount, and th
observed while the trolley makes one
down the plane. In this way he can
velocity-time curve (Fig. 1 and 6) remark
to a sine curve, or an acceleration-sp
(Fig. 7) very nearly straight.

It is usually found that boys are
when the question of the rotation of bo

es is dealt with somewhat lightly. But t a matter that deserves such treatment, ie parallelism of the equations for angular ar motion is fully brought out, and if the ke plenty of experiments with a " circular such as is shown (Fig. 8), the difficulties

Fig. 5.

r the most part to disappear. Experiith this trolley have great value in clear- boy's notions of angular velocity, &c.; ither take his vibration curves on tracing er a scale of radians and its subdivisions marked on the trolley, or he can measure -lengths in radians by taking the centre

Represents a point on the Curve obtained from Trolley Tracing
Represents a point on the Sine Curve, drawn on same base & of same height
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
TIME SCALE

Fig. 6.

is curve at some definite distance from say six inches, and measuring the wavewith a flexible inch measure. This effectuesses on him the meaning of a radian. is a difficulty in this case that does not th a trolley used for linear motion, in that the mass of the falling weight cannot be added to that of the trolley. This can be avoided by using as constraining force the pull of a spiral spring, and using a heavy flywheel instead of a trolley. The interchange of kinetic and potential energy is observed as previously described, and gives a direct measure of the kinetic energy acquired by the wheel. Here we can eliminate the effects of friction in the bearings by attaching a

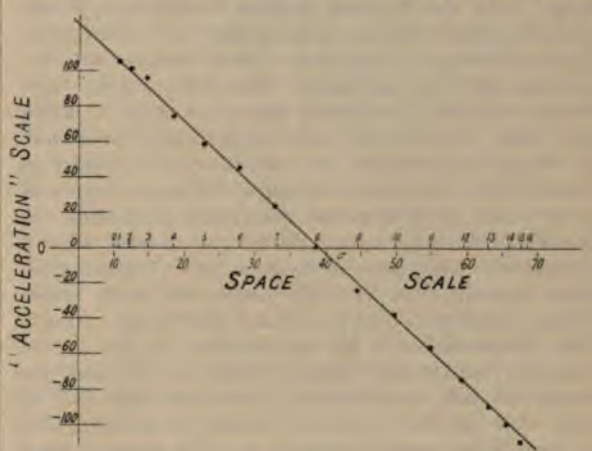

Fig. 7.

suitable weight to a thread round the axle; it is now a question of the kinetic energy of this weight, which the boy can calculate, and disregard if small enough, or add to that of the flywheel if necessary.

Exigencies of space curtail the list of experiments that have been worked out to illustrate the principles of kinetics, by the staff at Dartmouth; perhaps enough has been mentioned to show that as many are possible and simple in kinetics as in

Fig. 8.

statics. It is in the hope that this use of trolleys may receive the development which it deserves that I have brought up the question. So far as I know, the only published references to it are in Mr. W. C. Fletcher's original paper in The School World for May, 1904, and in Mr. W. D. Eggar's " Mechanics " (E. Arnold).

SCHOOL TRAINING FOR THE HOME DUTIES OF WOMEN.[1]

By Prof. A. Smithells, F.R.S.

IT is difficult to regard any work as more important for the world's welfare than that which falls to the woman who has to manage a home. We are, I think, all agreed that it is work for which training, somewhere and at some time, is in the highest degree desirable. Traditionally this training is provided by an informal apprenticeship in the home. As a matter of fact, among the vast multitude whose daughters have to go to work it is hardly provided at all; among the rest it is often very imperfectly provided. It would be difficult to estimate the evils that result from this state of things. The only remedy is to make provision for the training outside the home, and there seems to be no reason why it should not be provided at school except this, that school time is fully occupied with other things, and the children do not stay long enough. The question, as it affects children of the poorer classes, who leave school early, is beyond the scope of this contribution, but I should like to say that in the primary school I would, with a very light heart, sacrifice a good deal of what is now learned, for some simple sane instruction in the elements of the household arts and in the inculcation of cleanly and orderly habits of living. We seem to have made a fetish of the three R's and entirely lost our sense of proportion when we take the money of the State to apply what we call education to the children of the poor.

I wish, however, to deal with a different class of the community and a different grade of school --with girls who are better off and are in secondary schools. It is commonly held that such girls should be trained entirely at home in what relates to the management of the home. From this view I dissent emphatically for two reasons. In the first place the homes in question are often very much worse managed, and the seat of much more ignorance, prejudice, and folly, than their presiding geniuses have any idea of. It is not the last word of commendation, not a guarantee of perfection, for a girl to say, "I learnt that from my mother; she learnt it from hers." Who is there that has not suffered from such revered traditions in the field of cookery, to take a single prosaic example? All practical arts were once learned in this way, and we are tenacious of the system in this country. Some of our industries are perishing for no other reason than that traditional methods of work handed down from one generation to another are being obstinately adhered to.

In the second place I dissent from the view that all which relates to the management of the home should be learned in the home, because it perpetuates a severance between the work of school and the real business of life. We are living in a period of educational revolution, and as I can see, nothing is more prominent than the determination that school studi take what is called a more practical turn is often regarded as a Philistine movem the pedants are sore afraid. But the e determined to dethrone Euclid, and th done it. Rule, compasses, set-square, tractor—with these base mechanic tools young pupil now enter upon his study metry, even in the precincts of our gre schools. The power to *speak* the Fr German languages, too, is now hardly teemed than the learned dumbness for duced by a surfeit of their irregular ve

I wish to see some like changes ma teaching of things which are specially i to women. I would go a long way a such changes extend right through th of education to the end of the university

The management of the home and the of children—these are briefly the topi subject is much too vast to discuss as and I will only take part of it; but of t I may say that I shall not be content u these matters given at least as importan tion in our educational system as the tr doctors or engineers.

The part of the subject to which I ha serious attention, and on which I feel a to speak, relates to the teaching of scien many years past I have endeavoured t the teaching to girls and women of som the nature of science which shall be of r in relation to affairs of the household. M is not merely utilitarian. I start with th mental conviction, that no man's and no work is what it should be unless it eng exercises as fully as possible his or he of understanding, unless it acquires an in interest and gives that pleasure which is sible to one who is working in the light ledge. I need hardly insist that the h is truly a realm of applied science w educational system has allowed to remain of rule-of-thumb and drudgery. I do no complete remedy for this in the teachin qualified science. One may acknowledg fully that excellent progress has been the teaching of science in girls' schools this is well done one great thing is which may indeed be considered the thing that science can achieve—a scient of mind is imparted. If this is done, i perimental method has been faithfully ta have the emancipation from rule-of-thu mind is set free, and all we want now plication to a field of useful knowledge.

I know of no sphere of human acti more abundantly illustrates the unscien tude of mind than the household. Thin common phrases—"It has gone wrong; work; the oven won't heat; the jelly w the meat won't keep; it has gone bad; won't draw." This is the language of

[1] An abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

the thoughts behind are usually those of ion. A demon of perversity—a mere happening—is implied behind it all. In ny houses will you not see a poker at id across the fire-bars to make the fire This is certainly most interesting, for it ival from the days when people honestly that the sign of the Cross made by the ross the bars exorcised the demon in the Think of the mismanagement of gas- and gas-lighting appliances, of the waste in patent nostrums of every kind, thrust by much advertising, of the suffering ses from crass ignorance of sanitation. here is room for improvement; surely it considering whether we might not do let a little additional intellectual light domestic laboratory.

have said, I do not think unqualified will suffice. The science that is taught schools still remains for the most part nd academic in its scope, and it is sur- to find how absolutely detached this isually is from the concerns of the house- of common life. Schoolmistresses may l in any number who have taken high in science, yet can give you no intelligible of the hot-water system of an ordinary annot tell you what it is that yeast acts ien it is mixed with dough, and have no as to whether a hand-mirror is a satis- est for a damp bed. They do not know shing soda goes white or brass grows They think that dry cleaning is done with- g liquids, and that salts of sorrel have nique and inscrutable action upon ink- They know nothing of gas meters, filters, al thermometers, and are paralysed before chimney. Yet these people are learned ie oxides of nitrogen and the chlorides phorus, the oxidation of secondary alco- d the tests for cadmium.

t science of this formal kind is being d in certain schools and to certain kinds s, there is something of a different kind ne in other schools to other pupils. The knowledge of more mundane and prac- tters is fully realised, and we have long us the teaching of this under a variety s. Domestic economy and hygiene are ies most commonly attached. Here we e other extreme—science, properly so cientific method, scientific discipline, ra- connected knowledge, are here practically . The reasoning powers are in abeyance, pupil learns a miscellaneous assortment —tags of knowledge borrowed from chemistry, and physiology, and laid down rity. "Caraway seeds are largely im- from Holland, and are much used for g confectionery, cordials, &c. They are s of the *Carum carui*, a plant somewhat to the carrot and parsnip." "There is tea and coffee an astringent substance ives the well-known bitter taste to the infusions when they are allowed to 'stew.' In the case of tea it is known as *tannin*, and forms from 13 to 20 per cent. of the dried tea-leaf. In coffee it is called *caffeic* or *caffio-tannic acid*, but its amount is much less than the tannin in tea." And so on and so on. This is the sort of thing which has been offered as useful knowledge for the household. It is sorry stuff, and small wonder that it has produced nothing but nausea in the pupils and elicited nothing but ridicule from those who think that this is what we are aiming at.

I am convinced that there is a more excellent way. I am convinced that it is possible to develop a science of the household which is free from the pedantry of the formal science that has prevailed in one place, and free from the stale, flat, and unprofitable memorising of dietetic statistics that has been customary in the other. I have found it possible, as many others have done, to arrange a course of science lessons in which scientific discipline and scientific method can be inculcated by simple experimental work, based entirely on matters of the household and of daily life; where the information acquired is truly useful knowledge; and where the minds of the pupils are awakened to the fact that the household is, as I have said before, a laboratory of applied science that may constantly engage the intelligence. Syllabuses of this kind of work have been before the public for a long time, and among the earliest and best are those framed by Mr. Heller. We may call the subject domestic science. It is compounded of physics, chemistry, physiology, bacteriology; but these are hard names for simple things, and I prefer to suppress them.

Along with the teaching of domestic science in girls' schools I am anxious to see the teaching of domestic arts. I want to see a kitchen and laundry, as well as a laboratory. I want to see the teacher of domestic science well trained in the domestic arts and the teacher of domestic arts well trained in domestic science. In that case girls who have had their training in domestic science will in the later stage of their school career proceed to the practice of the domestic arts under the most favourable conditions, and their teachers will be able to play into each other's hands and give unity and continuity to the scheme of training. In this way I believe you may do something that is beyond the province of home training and is yet well worth doing. It seems to me quite as unreasonable to say that a girl will learn in the home all she needs to know about the household as to say of a boy that he will learn in the workshop all he needs to know of engineering. I submit that there is a vast undeveloped intellectual region connected with the domestic work of women. I have alluded only to a small part of it, and perhaps not to the most important, for I have said nothing of the nurture and training of children. I do not undervalue home training; I am not so inhuman as not to recognise that it must always remain the most potent element in the problem; but I see no irreverence

ol-leaving ones, so that all-round effi-
ıld have its due weight!
be mentioned here how one and another
on the most diverse topics came round
ed that children should be taught to
read *books*, that is, not *readers*, as
ell said; and that in later stages they
ırn how to track a subject from book
and come to value a library.
cussion on the training of teachers was
y Prof. Findlay (who told of the De-
on School in Manchester) and Miss E.
Jones, and some conflict ensued around
of psychology. Prof. Findlay put for-
value when taken in the modern sense
nental and genetic psychology. "Re-
said, "can only be secured from the
n of children while actually acquiring
perience"; you want "the habit of
he problems of teaching in a scientific
ıstead of relegating them to prejudice
tion. Prof. Gregory maintained, how-
psychology often expressed what every-
v in terms that no one understood. The
his consisted in reference to the morn-
ussion, in which every point in dispute
reform proposed rested on some psy-
basis, one speaker going so far as to
what everyone was supposed to know
those popular errors which hindered
ess of education more than anything
point was also made that theoretic
ill be best appreciated after or during
: let the teacher have a term off after
work, two terms after ten years, and
ter fifteen.
v. E. C. Owen dealt with the important
problems involved, and urged that in
ıssist the prospect of a career, a *sine-*
or administrative posts should be a ten
years' experience in a secondary school.
he morning devoted to inspection and
on, one may cull a few opinions. There
serious concern that the individuality
lom of schools should be jealously
in these days of what Prof. Armstrong
preponderant mediocrity." The same
olds, too, that examinations only test
with which teachers have learned to
the nakedness of the limited land in
miners dwell! A most important paper
leller contained too much to be epito-
e.[1] The suggestion to substitute the term
ıdvisers" for "inspectors" seemed on
s; the want of uniformity in inspection
was commented on; and from more
quarter it was urged that the technical
inspector's report should be laid before
ing staff only—governing bodies and
ill only misinterpret it. What will in-
hink of the proposal that they should
periodically and take a term or so in
room?
t afternoon travelled over modern lan-

[1] See page 353 of this number.

guage method, the cultivation of literary taste, and the alleged decline of German in our schools. One noted especially Prof. Findlay's view that the use of language is a synthetic, not an analytic process, and his deductions therefrom; that a new speech-centre has to be established with its accompanying set of experiences (don't attempt, therefore, to "establish" two foreign languages at once); that progress will depend upon intense absorption in the new art in an early stage, and upon suitable environment; and, as to details, that the phonetic script is of doubtful value to learners on the direct method.

It was refreshing, after our diligent attention to method, to be brought back by Miss L. Harrison to the great ends of imaginative culture and the spiritual value of poetry, and to our president's final words of counsel and confidence.

ON PHYSICAL EDUCATION.[1]

By Sir Lauder Brunton, M.D., D.Sc., LL.D., V.-P.R.S.

The name Physical Education is sufficient to show that it is only one branch of education, and before proceeding to study physical education in particular it may be well to say a few words about education in general. The word education is so commonly on our lips, that although we may all know, yet many of us forget, that it is derived from the Latin words "e," out of, and "duco," I lead. It ought therefore to be a process of drawing out, of evolving, of developing the latent powers of the organism. It may be illustrated by what occurs in plants. An orchid grower told me that he frequently bought large quantities of dry orchid bulbs, looking like scaly, withered and dried-up onions, fit only to be thrown away, but neither the buyer nor the seller knew what possibilities were contained in these bulbs. By careful attention to them, by supplying them with the proper amount of moisture and of warmth, these bulbs grew and developed. Many of them turned out to be very ordinary plants, but sometimes one would produce a flower so rare and so beautiful that it would be worth hundreds of pounds. How much this country and the world in general loses by the non-development of latent faculties in men can never be estimated, but Gray, in his Elegy, has indicated the greatness of the loss, when he says of those buried in a country churchyard:

> "Some village Hampden who, with dauntless breast,
> The little tyrant of his fields withstood;
> Some mute inglorious Milton here may rest,
> Some Cromwell, guiltless of his country's blood."

No doubt many explorers, inventors, orators, patriots, poets, and statesmen have died without their latent faculties being developed, and the world is the poorer for it. But in order that education shall fulfil its proper function, it must be a process of development of the mental faculties and not a mere process of cramming.

This is universally acknowledged in regard to classics, which are contained in the educational curriculum, not so much because they are to be of any practical advantage in after life, as that they afford a good means of training the mind. Yet the proper use of education is often forgotten, and it degenerates into a system of cramming the memory with facts and rules which interfere with, instead of aiding, the development of the higher mental

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

faculties. Education ought to be an all-round process, not limited to one faculty, whether that be of memory alone, or any other single faculty, whether it be of body or mind. The threefold nature of man has long been acknowledged in the expression body, soul and spirit, and in correspondence with this education should also be threefold, physical, moral and mental. The tendency of education to occupy itself with attention to detail to the exclusion of general principles occurs in all three divisions. Eighteen hundred years ago this tendency in moral education was rebuked by the greatest of all Teachers, who said, "For ye pay tithe of mint and anise and commin and have omitted the weightier matters of the Law, judgment, mercy and faith," and at the present moment it seems strange that Christians cannot agree that Christianity should be taught in schools without admixture of dogma. The same tendency which occurs in mental and moral education will be sure to occur in physical

FIG. 1.—Body development only.

education unless means be taken to prevent it, and in order to do this we must clearly understand what the object of physical education is and what it is not. It is not to train up our youths with enormous muscles which would be most useful to a coal heaver, or even with that union of strength and agility which we see in a circus clown or professional athlete.

What we want is to train the body so that it shall be a ready and able servant of the mind, and, by its complete and symmetrical development, aid in producing a symmetrical development of the brain and of the mental faculties which are dependent upon it. For a long time the body was not regarded in its proper light, as a servant of the mind and soul, but rather as a clog and hindrance to mental and moral development, and to starve and afflict the body was looked upon as one of the best means of attaining sanctity, and disregard of the laws of bodily health has too frequently been looked upon also as an aid to mental development. All errors, however, contain a germ of truth, and those I have mentioned are no exception to the rule. For if a one-sided conce either of morality or intellectuality, a one ment of the organism may assist its atta celibacy and sanctity were looked upon a extent synonymous, starvation and maltr body no doubt helped the monastic orders ideal. If the highest intellectual ideal be plete knowledge of the Greek authors, history, combined with a childlike ignoran of the world and matters of everyday life, life in the study is probably best adapte object. But if we wish to have a man ca a worthy part in his family, in his business or in the world, he ought to be symmetr in all directions, and his training should this end.

The connection between mind and br other things, is indicated by Shakespeare

FIG. 2.—Symmetrical development of mind

Othello, "O that men should put an e mouths to steal away their brains." between a limited portion of the brain and was indicated by Broca, who showed that third left frontal convolution was accompa the power of speech; but one may, I th regard the experiments of Dr. Ferrier on of the faculties of the brain, which he d meeting of the British Association in 187 as the commencement of a complete kn relationship between the mind and that p which we know as the brain. The mind only manifest their action through movem the body, such as the lips and tongue, Some movements are independent of the due to the spinal cord. Such moveme reflex, where the stimulus being applied is conveyed to a nerve centre and back motor nerve, in somewhat the same way as which passes over a pulley may lift a latch

t school sometimes test reflex action. Let us
s his hand upon the desk. This seems a tempt-
t to B, and he accordingly prods it with a pin.
fore he feels the pin, and before he fully knows
been done, A draws his hand away. This
reflex without A being really conscious of it.
this because in certain cases where a man has
ccident and broken his spine, the feet, on being
ump as they would in an ordinary person, but
nt is quite unconscious that anything is being
nem, and he does not know they move unless he
do so. But a stimulus applied to the surface does not reach the spinal cord only in a healthy person, but passes on to the higher and more complicated parts of the nervous system, that is, to the basal ganglia of the brain and to the brain itself. For example, A has had time to think, he resents B's prod, and if he happens to have a pin about him he will very likely press it into B, carefully choosing the place and time where the action can best escape the schoolmaster's attention. The first withdrawal of the hand was simply reflex, but the employment of the pin demanded complete co-ordination of many muscles, thought, foresight, and deliberation. The movements are carried on by the muscles, but they are set in action by the nerves, which convey stimuli to them from the spinal cord, the ganglia, and the brain itself.

agram of muscles
ntain the erect pos-
ter Huxley. The
e:—1, of the calf;
back of the thigh;
spine (these tend to
dy from falling for-
of the front of the
f the front of the
of the front of the
4 and 5, of the
e tend to keep the
falling backward);
indicate the direc-
ion of the muscles,
ing fixed.

The object of physical education is to develop each one of these organs so that it shall become most thoroughly efficient. Muscles are best developed by exercise, which, however, must not be carried to too great an extent. Exercise causes the muscles to become larger and stronger, over exercise causes them to become smaller and weaker. Even the most simple actions, such as those of standing ng, demand the combined action of many muscles and balance one another. This has been shown , whose diagram (Fig. 3) I reproduce. The body is upon the foot, but unless the muscles in front of contracted, the legs and body would fall back, the muscles of the calf contracted they would fall But this action of the calf muscle tends to bend and in order to keep the leg straight the muscles f the thigh must contract. But in their turn to bend the body forward on the legs, and in eep it straight the muscles of the buttocks and come into action. At first sight it would seem muscles were set in action directly by the brain, a man receives a violent blow on the head, he at once falls senseless and limp. Yet, on the other hand, we all know that we stand and walk without being conscious of the effort, and while our thoughts are occupied with other subjects. The reason of this is that the brain and the mind bear the same relationship to the muscles and lower nerve centres that the head of a large business does to those in his employ. Instead of himself directing the action of every workman, clerk, and message-boy, he simply says to his foreman or manager, "See that this is done." The general manager in his turn directs the managers in the different departments, and they issue orders to the workmen or clerks.

In the body the muscles may be compared to the workmen, the nerve cells of the spinal cord to the managers of small departments, and the so-called basal ganglia and cerebellum to the chief managers. The voluntary centres of the brain issue their mandate to the basal ganglia and

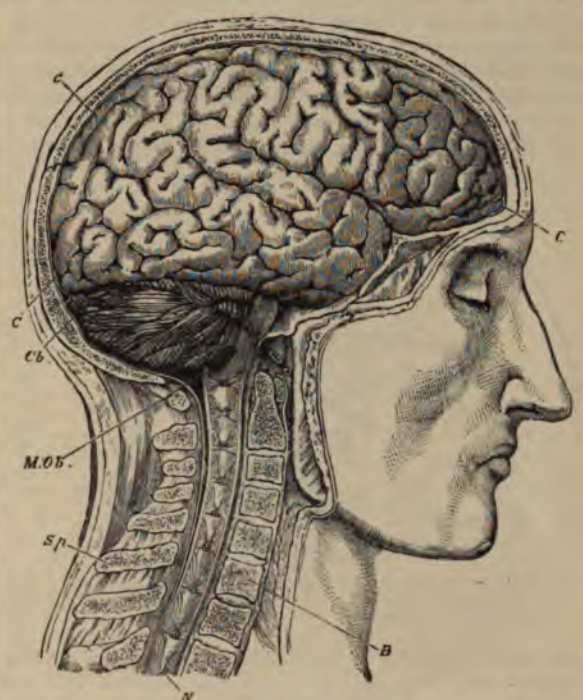

FIG. 4.—A side view of the brain and upper part of the spinal cord in place, the parts which cover the cerebro-spinal centres being removed. *CC*, the convoluted surface of the right cerebral hemisphere; *Cb*, the cerebellum; *M. Ob*, the medulla oblongata; *B*, the bodies of the cervical vertebræ; *Sp*, their spines; *N*, the spinal cord with the spinal nerves. After Huxley (by kind permission of Messrs. Macmillan and Co.).

cerebellum, and these in their turn regulate the action of the spinal cord and muscles. So long as the master is active, every member, from the highest to the lowest, is kept at work; but when the master is away they cease work, with few exceptions, and when the brain is rendered inert by a severe blow, by sleep, or by the action of drugs, co-ordinated actions such as we have spoken of all cease. But in large factories, even when all the machinery is stopped, it is usual to have a few men to look after the furnaces and prevent the fires dying out, as this would prevent resumption of work. In the body, even when the muscles become limp and the man is unconscious, the heart still goes on beating steadily, and the chest rises and falls in rhythmical respiration. But, just as in the factory, neither the master nor the subordinates learn the business in a day, so it is in the organism, and the time required

to educate it becomes greater as the possibilities increase to which it may afterwards attain.

Thus a chicken when it is hatched will at once look round and pick up food, but the newly born babe is absolutely helpless, and remains so for many months. It is those centres which ultimately attain the highest development which make the slowest progress. This is well put by Tennyson, in *The Princess*, where he describes the joyful movements of a baby on recognising its mother. "It began to dance its body and to stretch its fatling innocent arms and lazy lingering fingers." The first movements to be perfected are those of the body, which even in after life remain of a comparatively simple kind. The last are those of the fingers, which by and by may become most complicated, and are most under the direction of the will. In this particular they resemble the movements of speech, which are of all movements best calculated to express mental states, and which are acquired at a late period, although the respiratory movements of which they are composed are of the simplest order, and are perfectly performed even at birth. All voluntary movements are not only slow of acquirement, but they are very imperfectly performed at first. It would appear as if the will had a difficulty in selecting the proper muscles to put in action,

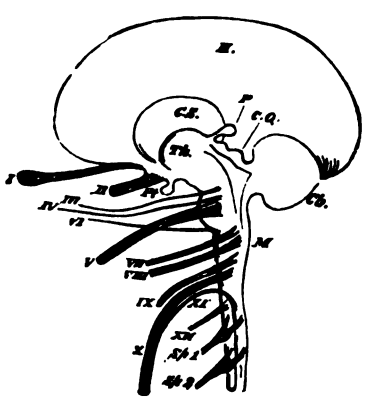

FIG. 5.—Diagram of brain, basal ganglia, medulla oblongata, and nerves. *H*, the brain; *C.S.* and *Th.*, basal ganglia (corpus striatum and optic thalamus); *Cb*, cerebellum; *M*, medulla oblongata.

and while trying to do this made the mistake of making several contract at the same time and interfere with one another's action. This is well seen in children learning to write, and when the movements of writing have been acquired the pen is held lightly between the fingers and moves softly and rapidly. But when the child begins, it holds the pen very stiffly, and the fingers may be seen to be convulsively grasping the pen, which are often seen bent at the joints, and the wrist may be flexed with the effort.

The cause of this has been beautifully demonstrated by Dr. Ferrier, who has shown that when a stimulus to the part of the brain which would govern the movements of the fingers in the hand is very great, it will extend, not only to the arm, but also to the centre for the mouth which is adjoining. In consequence of this we see children who are learning to write stick their tongues out of the corners of their mouths quite unconsciously, and as though the action would help the movements of their pen. In acquiring the power of co-ordinated action, the brain has not only to learn how to set the proper muscles into action, but to limit the stimulation to these muscles and to prevent the stimulus from spreading to others which would interfere with their action. This power of keeping muscles quiet, or inhibition, as it is termed, is highest faculties of the voluntary centres. It investigated by Prof. Sherrington, and its nec factor in physical training has been insisted u Eustace Miles. It is also one of the great pc Japanese system of ju-jitsu.

Learning new movements entails constant action of the cells of the brain proper, and t quires severe mental as well as bodily effort;

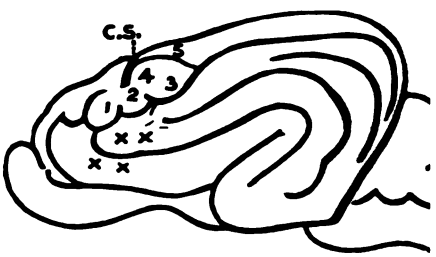

FIG. 6.—Diagram of brain of dog, modified from Ferrier. sulcus; 1, movements of eyes, as if to see freely; 2 and of fore-leg, and 4, of hind-leg, as in running; 5, mov requisite in turning quickly, as when a greyhound is fo when it doubles; × × ×, movements of mouth and jaws.

has been done many times the basal ganglia accustomed to the regulation of the muscles t it unconsciously, and therefore most people sta while thinking of other subjects, and w musicians even difficult pieces may be played wi while the musician is engaged with other thing unconscious of the movements of his finger when movements have thus become, as it is te

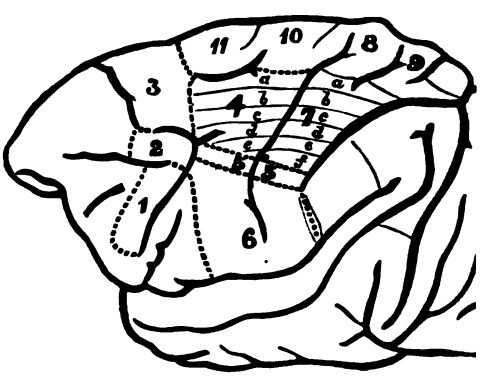

FIG. 7.—Diagram of the motor centres in the brain, modified Ferrier and Horsley. The motor centres have been num represent the successive actions in seeing, taking, and ea &c. 1, Eve sees the fruit (eyes turn to opposite side); eagerly at it (head and eyes turn); 3, turns towards it (h side); 4, puts forth her hand to take it (*a*, movements of elbow; *c*, of wrist; *d*, of fingers); 5, luxuriously shuts l to enjoy the sweet morsel more thoroughly; 6, eats the out and throws away the refuse (*d*, movements of finger *f*, of thumb; *a*, *b*, *c*, as in 5); 8, 9, 10, 11, goes and g Adam (8, movements of hallux; 9, of small toes; 10 ankle; 11, of hip).

matic, the interference of the basal ganglia cerebrum or cerebellum may disturb their acti the case of a musician may lead to mistakes w not occur if he played on without thinking.

The relation of the various parts of the brain actions and sensation have been well shown by Dr. Ferrier, and by others who have follow acted as his assistant in many of his first e observing the results while he stimulated the br

watched them, however, I could not remember
il I considered that they were probably arranged
nite order for the purpose of getting food, and
vas easy to recollect them. Around a fissure in
, called the crucial sulcus in the dog, the centres
arranged: paw, fore-leg, hind-leg, and tail, *i.e.*
ments of the legs which would be required for
ts prey, and of the tail for turning, as a grey-
es when a hare doubles. The movements of the
t some distance, as the jaws would usually come
n after the pursuit had gone on for some time.
nonkey, however, the case is different, as the
ts of the hands, legs, and jaw would all follow
ner in regular order. The motor centres in man
ged very much as they are in the monkey, and
ed for taking and eating fruit. One of the easiest
recollecting them is to take the story of Adam
and follow the different actions upon a diagram
in, each action corresponding to a definite centre.
g, sight, and sensation are located in the various
the posterior part of the brain shown in the
hile the higher mental faculties are probably
ely connected with the anterior lobes. Injury to
arts of the brain, such as may be caused by a
ow or by the bursting of a blood vessel, or by
of the circulation through a clot, may destroy
wo faculties while leaving others intact. Thus
r of writing may be destroyed by injury to the
ontal and the power of speech by injury to the
ntal convolution on the left side in a right-
an, while the power of the arm and leg may be
, or hearing or vision may be lost, by destruction
rresponding portions of the brain. Nor is it only
tal or mental powers that may be injured by the
a brain.

me may occur in the moral character. This is
vn by the famous crowbar case. A man named
ing near Boston, in America, was engaged in
a rock. While ramming a charge of powder a
identally ignited the powder, and the crowbar,
s 3½ ft. long, went straight through his head,
below his jaw, and coming out at the top of his
onderful to say, he recovered from the injury,
that time onwards his character was changed.
reviously been a foreman, steady and trustworthy,
wards he became exceedingly idle, flighty, and
so as to be quite incapable of doing his former
d as his acquaintances expressed it, he was no
age. I have already mentioned that while the
s on the body, the body reacts on the brain. In
mputation of a limb, especially at an early age,
sponding centres in the brain have been found
e more or less atrophied. Even in such a simple
memory we can see the co-ordination of the body
mind. Many people are apt to forget a name
y simply hear it, but if at the same time they can
writing they remember it more easily, and they
till better if they write it themselves and speak
nselves, even if they do not say it aloud, because
obtain the co-operation of the centres for hear-
t, and memory, the memory of the fingers in
and the muscular memory of the larynx and
speaking.

r to obtain symmetrical development of body and
physical exercise, it must be remembered that a
ps before it walks, that the simplest movements
earned first, and that unless these movements are
matically they involve a certain amount of mental
strain. They cannot, therefore, be regarded as a relaxation from mental work, and, on the other hand, mental strain will induce bodily fatigue. This has been well shown by Mosso, by means of an instrument called the ergograph, where a weight is raised at intervals by the contraction of one finger. To the string bearing the weight a lever is attached, which works on a revolving cylinder, so that each contraction makes a straight stroke of a greater or less height which indicates a more or less perfect contraction of the finger. The mental fatigue produced by giving a lecture has been thus shown to cause more rapid exhaustion of the muscles of the arm and lessen power to raise a weight. While mental fatigue thus lessens bodily power, we must be careful to remember also that unaccustomed bodily exercises produce mental fatigue. This has been well recognised by the Departmental Committee on a model course of physical exercise, where they say, at p. 12, "the learning of bodily exercises by repeated efforts demands a concentration of attention and a mental exertion in all respects comparable to what is required in other school lessons." This report gives an

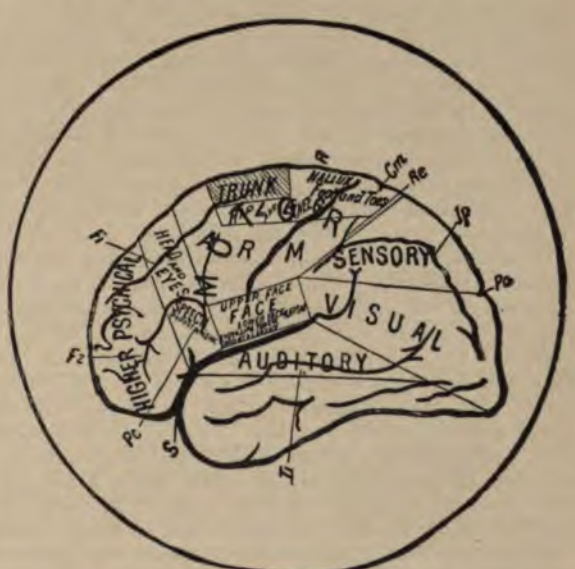

FIG. 8.—Cerebral cortex, showing the distribution of function. After Osler.

exceedingly good account both of the physical and educational effect of exercise, as well as a long list of examples by which the muscles of the lower nerve centres may become well developed. In reference to ordinary movements, and especially to balanced movements, the authors say that "at first each of these exercises requires for its performance in varying degree a certain concentration of mind and a certain effort of will, and it is only by repeated, and at first laborious, efforts that perfection of execution is arrived at. A certain degree of fatigue accompanies the earlier performances, and the more immature the structures put into action the more sensitive they are, and the earlier do they show fatigue. At the same time the effect of each performance is stored up as a permanent memory, the repetition becomes less fatiguing, and the result of lessons repeated week by week is that eventually the exercise becomes practically automatic. At this stage its value as an educational exercise virtually ceases, but its value as a nutritive exercise remains and is even enhanced."

It follows that in a school course one and the same

ıld enjoy and in a way that could be remembered
class.
hat are the boys to be doing while the girls are
how to tend dolly? Some of them may be learn-
nastics with apparatus on the parallel bars, on
ontal bars and on the horse; others again may
es of ball, or others again may try their strength,
ng, in obstacle races and in various games. Per-
e is no drill which is more perfect than that which
d upon in cricket and boating and football, but
e who form the team enjoy the privilege of having
ing. What we want is that every boy should
and this can hardly be done in any other way
various forms of drill. Drill is very monotonous
be greatly relieved by allowing the boys to learn
just as the girl's interest would be awakened by
he objections to boys learning to shoot are the
the expense. Both of those may be reduced to a
by making the boys shoot with percussion caps
s. At four or five yards the candle can be ex-
l by the air issuing from a musket when the
cap is exploded, but the aim at the bottom of
must be nearly as accurate as to make a centre
dred yards. It might be held out as an induce-
them that the best shots would be allowed to
vith a Morris tube, and later on they might even
use of service rifles. The old war game such as
and "Prisoner's Base" might be adapted to
arfare, and J. Fenimore Cooper's novels might
o teach scouting to the bands of white men or
nto which the boys might divide themselves.
ple might argue that such a course would tend to
pirit of militarism in this country. For my own
ieve that it would just be the reverse; that such
would greatly help boys to become volunteers,
with an almost universal system of volunteering
lessen our Army without risk, keeping a corre-
amount of tax money in our pockets, and live
the dread of foreign invasion on the one hand,
universal conscription on the other.

r to ensure such a desirable end we require the
n of every man, woman, and child in the country,
e purpose of obtaining this the National League
l Education and Improvement has been estab-
he object of the League is not to displace any of
es at present working for the health and welfare
ple, but to make them known to one another,
n how their work can best be supplemented when
nt, and to extend the benefits of physical training
the whole country. It thus hopes—

1. To save the babies.
2. To help the children.
3. To train the youths.
4. To instruct the parents.
5. To lessen the drink.

a year since it was incorporated, but the good
its action are already manifest, for it decided
st object it should try to secure was compulsory
pection of schools, which it felt to be the founda-
of physical education. It sent a deputation, on
27th of this year, to wait on the Minister of
He expressed his sympathy with their requests,
think we may look upon medical inspection of
an accomplished fact.

want the systematic teaching of hygiene by
"Dolly," then a pure milk supply, visitation of
eding of children, and in turn everything required
a free, healthy, strong, wise, and moral people.

FUTURE WORK IN ENGLISH EDUCATION.[1]

By Prof. M. E. Sadler, LL.D.

During the last ten years more thought and labour have been given to educational questions in England than at any earlier period in our history. If we compare the present state of things with that of a decade ago, we have good reason for encouragement and hope. Great additions have been made to the number of our schools and universities; within the last six years six universities in England have been either reconstituted or actually refounded, two in Yorkshire itself; great changes have been made in the machinery of educational administration, and an even greater change has come over the attitude of mind with which thinking people approach the question of what our schools should teach, how they should teach it, and what should be the social purpose underlying and inspiring their work. We have moved, often unconsciously, from our old moorings. A strong current which we could not resist has shifted us from where we lay, more or less comfortably, before. And we have had to move in a fog, a puzzling and dangerous fog, now impenetrably thick and now lifting enough to show that we are moving in strange waters. First on one side and then on another we have heard angry cries at impending collision. But the current carries us on amid conflicting advice as to the handling of the boat, and much discord of opinion as to whither we are really going.

If, however, we review the general course of events in English education during the last few years, certain changes stand out conspicuously and call for notice. There has been a great growth in public control over educational work. The chief tendency of recent legislation has been to strengthen the powers of the Board of Education on the one hand and of the local authorities on the other. It is true that many of these powers have not yet been fully exercised, but they have been granted, often without serious challenge, and they lie in reserve. Whether in course of time the enforcement of these powers will come chiefly through the central authority or through the local authorities is still uncertain. The cantonal principle and the national principle are struggling for the mastery. Probably neither of them will completely prevail. But considerations of finance, the growing need for increased contributions from the Treasury in relief of local rates, and the accumulation of experience in the very large and widely distributed staff of the authority point towards a steady increase in the power of the Board of Education to press for change, partly through the direct exercise of the power of the purse, partly through the action of local authorities taken in response to its own steadily urged requirements.

Secondly, we have realised more fully than heretofore the need for greater unity of purpose in the different grades of education, and the dependence of what is attempted at one stage upon what has been accomplished in another. For example, we have recognised the fact that technical instruction cannot be built up as a detached system by itself. In its higher forms it has to rest upon a long and carefully organised course of secondary education; in its more elementary grades upon a sound basis laid in the primary and higher elementary schools. There are a number of frontier questions. The need of adjustment between the methods of teaching in the infant school and those employed in the junior classes of the senior school; the waste of effort caused by a sharp break of

[1] From the presidential address to the Educational Science Section of the British Association at its meeting at York, 1906.

gauge at the junction between the public elementary and the older type of secondary school; the impossibility of making an effective reform in the curriculum of preparatory schools without a modification of the requirements of the entrance and scholarship examinations at the public schools, are all frontier questions, the consideration of which has forced upon us the need for greater unity of plan in our educational system.

Thirdly, a wholly new stress has been laid upon the physical side of education. A systematic physical training must be regarded as the essential part of the daily work of every school, and will be found as beneficial to the intellectual and moral development of the scholars as to their bodily condition. For guidance in the educational treatment of every child according to its physical need; for the detection of defects in eyesight, in hearing and in teeth; for marking the symptoms of organic disease, we require systematic medical inspection of all school children at periodical intervals, especially in schools in poorer districts. The crux of the difficulty lies in getting the parent to act upon the medical inspector's report. But the majority of parents, especially when interest in the matter was shown by a personal visit to the home, would take the necessary steps to secure the medical treatment required. Where help was necessary, it would not be difficult, through the co-operation of charitable agencies, to secure it. And in cases of obstinate neglect the law should severely remind the parent of his responsibility. But to improve the schools and the physical care of the school children is not sufficient without reforming the state of many of their homes also, and without a great change in some of the conditions of industrial employment. Where the insufficient feeding or the wrong feeding of some of the children is found to defeat the work of the school, the real cure of the mischief lies in dealing with the parents, with their economic weakness or ignorance or wastefulness or insensibility, as the case may be. Where the children come to school exhausted by the strain of long and late employment out of school hours, the remedy has to be found in stringent regulation of the use of juvenile labour, and, so far as may be, in the prohibition of those forms of premature wage-earning which are fatal to the gaining of industrial efficiency in later years. Thus at point after point purely educational questions are implicated with economic and social problems, and we are forced to the conclusion that educational reform in any true sense of the word involves the intrepid handling of evils which lie outside the class-room and affect the home life and economic welfare of parents and children alike.

Great changes are coming, and coming in the right way, by individual effort responding in many ways to a new sense of national need, as well as by a gradual reform from within of many old institutions which have struck their roots deep into the national life. And, if we extend our view to what is going forward in Scotland, Wales, and Ireland the same impression is confirmed. It has been and is the good fortune of England to receive educational stimulus of different kinds from each of the other parts of the United Kingdom. Scotland, above all, has during the past century and a half taught us many lessons. And we have only ourselves to blame that we have not learnt from her many more. One of her lessons, that the higher educational opportunities should be brought within the reach of every lad of promise, we have at last taken to heart seriously with already fruitful results. Nor ought it to be forgotten how much stimulus and quickening of purpose we have derived from the zeal and courage of America, from the diligent pains, the thrifty but never parsimonious management and skilfully directed efforts of Germ tion; from the very practical patriotism of Den from the brilliant renaissance in France. In one nation is foolish to attempt a slavish copy c but even still more foolish to refuse to learn fro the result of all these divers influences on English is that much more that is hopeful for the future taking place in English education than any on can realise.

The leaven is at work. If we were info similarly fruitful movement in educational opi foreign country we should be ready at once and draw a moral from it. Let us not deny ou pleasure of deriving encouragement from what place among us at home. It was indeed high great change, for I suppose that no one who to look upon English education with a candid e admit that in no other civilised country have otherwise intelligent people been habitually ind education, or unaware of what it may be able to

In spite of the fact that the suggestions to t the elementary schools, issued as a Blue-boo Board of Education, has had a sale equal to popular novel, I am afraid that great tracts of th indifference still remain undisturbed, and it admitted that in England, as compared with t Scotland and Germany, the home does little to with the work of the school; that manifold cl tions have prevented the growth of unity in system—class separations which seem to me n disappeared, but to have been gathering into groups lately in educational work, and therefo reduced the amount of intricacy and the difficult made by both; that we have been very wast more ordinary kinds of intellectual material; th done pitifully little to teach the mother tongu have done far too little in our school lessons the imagination which, on social, on political, or and on every ground we greatly and urgently that by our worship of examinations we encourage, on the part both of teachers and of le wrong attitude of mind.

On looking at the matter as a whole we reason to feel that during the last ten years th the nation towards educational matters has s changed. If truth be told, we are worried and the questions involved. But I make bold to s are perfectly right to feel worried and puzzle central difficulties of the whole matter are the a profound change in our mental outlook, due t investigation and to an upthrust of new social ideals which is due in a great measure to the s that our best chance of gradually finding a rig for our difficulties lies in discarding the idea t where in the world there is a magic formula in which can heal our troubles, and that we sho recognise the need of patient and systematic exp new educational methods and forms of training.

It has been my duty during the last two or t to be allowed by a number of local educational and others to see something at first hand of mar kinds of education in typically different parts of th Might I venture very briefly to summarise the and impressions which these inquiries have mad mind? In the first place, I am profoundly im the differences between different districts in thi differences in economical need, and, what m more, in psychological outlook upon educationa

one country in the world where a rigid cut-
State system is quite inappropriate, it is this

, I feel that we cannot be too grateful for the
men and women all over the country, teachers
istrators and social workers, who are devoting
tion of the public welfare an amount of thought
and money which I think, at any rate, is not
n any other land. And we may be thankful for
s of mind and temperateness of judgment which
outlook on educational affairs.
o deeply impressed by the inevitable expense of
-impressed by the necessity of our doing much
we have yet done, and yet by the grim figure
epayer standing behind these iridescent hopes.
inced that we should do wisely in educational
try to carry the mass of the people along with
ot to go too far ahead of current opinion.
moving, and people listen to argument, and I
ove the case that is put before them by their
s and criticisms. Much has been started during
w years, and we may well be content to watch
w outcome of much that has been done.
think that we know very little about what is
in England itself. I suppose that if anybody
say what the curriculum of all the great public
s at the present time, how much time is given
m to each subject, how many exemptions were
d what kinds and degrees of specialisation were
he simply could not answer the question.
t much to be desired that we should have
record a real description of what is actually
ard in English education of all grades at the
e? Then this is a suitable occasion to plead
matic, periodic series of physical measurements
in all schools as a basis for future social con-
d scientific inquiry. Much more might be put
nd published about the remarkable variety of
change that take place in our English schools.
omething like an inventory of educational effort
written, and its bearing shown upon the
nd social needs of the nation. We may welcome
ties which are to be placed upon His Majesty's
of taking these wider surveys of educational
considering the relation of what is done in
he need of the communities in which the schools
d. Is it too much to hope that some time the
hority will regularly publish these reports and
es, and that every teacher and every member
authority should be able to receive regularly,
t trouble and without payment, each new
the series from headquarters? We need much
fertilisation of ideals through the regular publi-
he results. We have much to learn from the
ith which the great American central offices
out charge and abundantly, information to all
r it. The great thing is that we should not
forced upon us by the central authority, but
llingly and gladly in our own way; and we are
kely to do that if we are continuously thinking
er and refreshing and stimulating our mind by
ge of what has been actually accomplished.
hat remains for us to do will it not be wise
the growing points in the present educational
nd then to encourage growth from those points,
wasting a good deal of time on what may be
rded as dead tissue?
wing seem to be the great points in English education at the present moment. First, the new keenness on the part of many intelligent workmen to get the elementary schools better, to have more individual teaching in them, to have fuller staffing in the high standards so that there is less marking time in the last years of the course, and then to have connected with the elementary schools, and in sympathy with them, a new type of school which provides a higher education to about fifteen years of age, and then a carrying forward from that of technical and physical education in evening classes well graded through the district; and for adult workers a further education, which is not simply bread-winning and technical —excellent as that is—but which has a touch of imagination and humanity and civic idealism about it as well. I take it that that is one great and continuous line of the light across the educational situation, one that we ought to watch, one that we ought to welcome and encourage. And what has been done along that line will stimulate another line altogether to adjust it to the new conditions.

Then further, no one, I think, can visit school after school without being impressed by the keenness and vitality of interest in those class-rooms where practical science work and manual work are being done. We are not here to plead for science against the humanities, or for the humanities against science, but I think we may indeed rejoice to see a new and kindling interest in our education through the greater development of practical studies.

And thirdly, it is striking how many of the great employers of labour during the last two or three years have shown a new and welcome interest in the problem of encouraging education among their workpeople and apprentices. It is most striking in the case of the railway companies and the great engineering firms, and it is spreading from those firms to many other industries. Then there is a growing keenness for better physical training, a physical training which shall not end with the elementary school, but be carried on through adolescence and be part of the obligation of each individual to the community. But if we are to help forward the education movement at these points do we not need much more carefully planned and systematically watched educational experiments to see how to meet the need thriftily and efficiently? I mean experiments which will be thought out beforehand, continued for a sufficient period of years, in which failures would be as frankly recorded as the successes, and to which the results, not necessarily, I think, under the name of the school or the teachers, but possibly under numbers, should be regularly distributed among all concerned.

The first experiment which I would commend as greatly needed is one for the better classification of the children in public elementary schools with regard to their different rates of mental growth and different intellectual attitudes. Valuable work on this subject is being done by Mr. Lauth. Do we not too much in our present system of elementary education treat quite different types of children too much alike? Is not one of the most necessary things for social and economic well-being the greater individualisation of English people, especially through the course of primary education? The sifting out of the defective children is the beginning of a process which I, for one, hope to see carried much further. In the town of Mannheim the Superintendent of Schools has arranged a subsidiary department in the school to which children of slower growth may be temporarily transferred for separate treatment and teaching until such time as they are able to take their place again in the main department of the school. In many cases where the students are very large in number there are divisions, one for the quicker and one for the

slower children. But do we not need to push this a great deal further, and make much more distinction between different types of mind and rates of intellectual growth from the bottom of the school upwards. It means smaller classes, and smaller classes must be very expensive, so expensive that I think we ought to try by experiments to see what we can do effectively to individualise the children by dividing classes for different parts of the work, by encouraging private study on the part of some of the children to a much greater extent, and by massing groups of children more together for certain subjects.

It would be an excellent thing if each great local authority would have two or three of its elementary schools set apart to work out the educational problem and the financial problem really involved in giving every child in the school an individual and suitable training.

Then it is desirable that we should have in more of our districts a new type of elementary school tried, with far more manual work in the curriculum, with a great deal of physical training, and much simpler literary and arithmetic training. We have a lesson to learn from the industrial schools, and I cannot help feeling that, with all the good intention in the world, the present curriculum of the ordinary school is too ambitious and too varied.

Then we need a very careful working out of the course of study and of training in *esprit de corps* in higher elementary schools between the years of twelve and fifteen —careful experiment as to how to adjust the studies in those schools to the real needs of different kinds of practical life, and at the same time how to keep fresh and strong a literary interest and feeling of civic duty. We need, again, a carefully watched experiment as to the actual results of postponing the beginning of Latin as a regular school subject until twelve years of age. We wish to know how quickly clever children who begin late can actually pick up to the standard reached by those who have begun the language much earlier. We need, I think, to know more thoroughly than at the present time what such a change as the postponing of Latin until twelve would mean actually to the normal standard of scholarship at the head of the classical secondary schools. We need a careful comparison of the classical attainments actually reached in the Gymnasien in Germany, where this system has for some years been on trial with good results, with the classical attainments of the boys at similar ages in our own classical schools. Further, a comparison should be made of the *general* attainments of the boys in the same two groups of schools. If it is possible to defer until twelve the beginning of Latin as a regular school subject many difficulties arising from the break of gauge between primary and secondary education will be found to be happily modified.

I desire next to direct your attention to what is at once an urgent and extremely difficult problem in our English education—I mean the waste of intellectual power and the waste of moral discipline which arises from children leaving the elementary school at thirteen or fourteen and passing outside altogether from discipline and educational care. The problem of the right education of boys and girls during adolescence is only just beginning to receive the attention which it deserves. But can we live in our great cities without having an uneasy feeling that modern conditions of city life and of city employment, with its opportunities for earning a comfortable wage quite early, and with its opportunities of excitement, are really imperilling the stamina of many of the boys to whom we might look forward to be the recruits of our skilled industries, and to many girls to whom we look to be the mothers of good and healthy homes in the fut much to be feared that certain phases of moder which depend on the practically unskilled emp boys and girls as they are turned out of the schools are in part parasitic in character, and, more than they ought to have, and more than moters realise they are getting, of the moral physical strength of the nation.

In the year 1902, of the whole population between fourteen and twenty-one only 15 per actually in attendance at the continuation sch the then London School Board. If we double t is an excessive estimate) for the number in t classes under the then Technical Education come to 30 per cent. only of these young peop under educational care during those critical 1904, in Manchester at least 14,000 between fc sixteen were not in evening schools or day sch conclusion which is being forced, I think, on th of observers is that we cannot afford to allow t to go on. We are in the position of people wh down a costly water supply and then left a l pipe just behind the tap. Mr. Creasey in h book on technical education in evening school authors of "Studies of Boy Life in our Great Cit by the Toynbee Trust, have all agreed that must be done to require in certain forms contin tion during those critical years. Out of seventy- and experienced administrators in all parts of whom it has recently been my duty to consult than fifty-two were in favour of some form of attendance at continuation classes.

During the last two years there has been a improvement in the organisation of evening many industrial towns in this country—an i due to the labours of the local authorities organisers, and to the wise counsels of the Education. I wish to point out what has be Halifax. Last year, in Halifax, of all the b borough of thirteen, fourteen, and fifteen ye who had left the day school, 69 per cent. w evening classes, and 96·7 per cent. of the bo were attending three evenings a week; 25 p them had not missed a single attendance, and had made between 90 and 100 per cent. of a That has been done through good organisa voluntary basis, by grading the schools skilfull inducements to punctual attendance, and also the courses of study bear directly on the va and needs of the borough. In the rural count bridgeshire there is, I believe, an evening scho parish, and I believe I am right in saying th result of many years of careful work and enco 60 per cent. of the boys who remain in the o leaving the elementary schools are to be fo regularly attending the evening classes.

There are one or two cases of wise and lib on the part of employers of labour to which I At Messrs. Rowntree's cocoa works in this ci under seventeen are required to attend a school economy, cookery, and so forth two hours a w work-hours in an excellently planned and school, maintained by the firm at its own the works. There are three teachers; the scho the supervision of the Board of Education, 52 in attendance, and the results are most enco those who have tried this valuable and epoch-m periment. Messrs. Cadbury at Bournville requi

under fifteen to attend the gymnasium twice At Messrs. Crosfield's, of Warrington, attend- vening schools, greatly helped by the firm, is for all boys and girls employed under seventeen ge, and the hours of work with the firm are so o make this attendance possible without undue d all boys and girls of fifteen (thirty boys and girls) are sent to learn swimming at the town

eat as is the value of this voluntary work, it touch the mass; it does not touch that huge which we feel is drifting off, after the elementary o physical and intellectual disorder, losing the vork, losing the habit of discipline, becoming sing exactly the powers of mind, body, and which are needed if they get the opportunity to illed trade.

l we not conclude that it is no good merely to ndance at existing continuation schools com- less we touch as part of the problem the ques- hours of late work of juvenile workers? The l lie in throwing a statutory obligation upon all of juvenile labour up to seventeen to facilitate of their young people at evening classes with- physical overstrain. The local authority should cert with the employers and the representatives kers in each trade to plan a course of study in g schools which will be technically useful to receive it, which will at the same time be o them, and which shall not lose sight of the se.

exactly the stage through which Germany has russia is organising, by local option in district ct, obligatory attendance at continuation schools g on the employer the duty of facilitating the of his own workmen at such schools, and per- e local authority to make such attendance on boys, or, if they wish it, on girls, within a d of years as may seem to them suitable. In grees, attendance at continuation schools is com- a number of other German States, viz. Bavaria, g, Baden, Saxony, Saxe-Weimar, Saxe- Saxe-Coburg Gotha, and Hesse.

erland attendance at continuation schools is, in t wholly, obligatory in seventeen out of the cantons for boys, and in one canton for girls. like to see a beginning made by some local requiring attendance at a course of physical r all boys and girls up to seventeen. But we raise the level of the primary schools by quicken- ellectual power of the teaching through making r in the classes smaller. We must develop our schools in order to spread a wider educational nong the employers and foremen. And these s, working together, will, I believe, steadily and nt time lead us to the conclusion that it is not ary but wise to make some measure of attend- ntinuation schools obligatory for boys and girls are seventeen years of age, leaving the details ption, and encouraging those districts which oulsory attendance by a double grant.

e three great names in educational history con- the county in which we are met: Alcuin, the he great school at York, who organised for he the palace school at Aachen; Roger Askham, Viske, near Northallerton, a friend of Lady Jane the teacher of Queen Elizabeth, who among rs on education was unsurpassed in his psycho- logical analysis of the different types of mind with which the teacher has to deal; and Joseph Priestley, man of science, philosopher, and teacher, who opened out for the middle classes a new ideal of modern secondary education, insisting that the studies of the secondary schools should be brought into real touch with the needs of modern civic life, and who wrote perhaps the best essay in the English language against any undue State monopoly in the control of national education.

Have not each of these great Yorkshire leaders their message for us to-day?—Alcuin to remind us that, whatever else is done, the nation must educate its leaders; Askham to remind us that, in order to individualise our scholars, we must distinguish between their aptitudes and natural rates of individual growth; Priestley to remind us that the key of the situation lies in getting new ideas and greater keenness into the secondary schools of middling rank, and that we should do nothing to weaken individual initiative and private experiment by taking the tempting short cuts offered by excessive State control.

THE CONSTRUCTIVE WORK OF AN INSPECTOR OF SCHOOLS.[1]

By W. Mayhowe Heller, B.Sc.

The fundamental functions of the inspector of schools are:—

(*a*) To see that value is obtained for the money spent on the educational work of schools.

(*b*) To suggest remedies where due educational economy is not practised.

Although the education authority (either local or central) is responsible for the educational policy of the schools, it must look for advice to its experts, the inspectors, who, better than others, can appreciate the educational needs of a district, and are in a unique position to evaluate the results of the various programmes and methods followed in the schools under their charge.

Whether an official of the local or central authority, the inspector is the servant of that authority; both he and the teacher receive common instructions from it. The first condition of efficiency is, therefore, that these instructions shall be wise, clear, and definite, and that they be loyally observed by teacher and inspector alike.

There is some difference of opinion as to the necessity of an inspector possessing teaching experience. But how can an inspector, without a varied teaching experience, and that experience of the right kind, presume to criticise the methods of others? The teacher is unlikely to respect or to act upon the suggestions of an inspector who has only a theoretical knowledge of education. The position of such an inspector is like that of the student in the practical examination who, having repeatedly failed to perform an experiment, thought he ought to receive marks for "knowing how to do it."

Assuming, then, that the inspector should possess successful teaching experience, he cannot be appointed at so early an age as hitherto. He should have experience of both primary and secondary schools, and should, if possible, have gained that wider outlook on school work and organisation which comes only with the responsibilities of headmastership. He must realise that education is an experimental science, and that scientific method underlies the whole art of teaching. He should be an enthusiastic student of educational progress in other countries than his

[1] From an abstract of a paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

own, and be possessed of the personal qualities of tact, sympathy, and firmness.

In the primary school it is often desirable to have every subject dealt with by the same inspector; he must, therefore, have a thorough acquaintance with the matter and method of teaching all the principal subjects of the curriculum. If he is only slightly acquainted with some branch, he is almost certain to ignore it, and by so doing will in a very short time destroy any effective teaching of that branch. It is not to be expected that teachers will put themselves to considerable trouble in preparing and teaching a subject if the results of their work are neither asked for nor commented upon.

This does not mean that the inspector should be a "Jack of all trades and master of none," but he should at least be thoroughly familiar with the aims and methods underlying the teaching of all subjects. It is very desirable that he shall have reached a high academic standard in one or more branches. In the secondary school, it is not reasonable to expect one man to inspect constructively the teaching of all subjects; at least two types are necessary: a literary man with a knowledge of classics, English and foreign languages; and a scientific and practically trained man, with a knowledge of mathematics, science, manual instruction, geography, and, if necessary, domestic science and drawing.

The time seems to have arrived when the term *inspector* may be usefully abolished. Teachers need more than inspection, criticism, and censure; they need suggestion, help, and encouragement as well. The "inspector" would spend his day watching the teachers at work (under highly artificial conditions), would say little or nothing, go home, and write his report, giving praise or censure as the case may be; he would probably only have seen specimens of work in less than half the subjects of the school programme, and the lessons he listened to had probably been given to the same pupils before, and were, therefore, worthless as specimens of teaching. If we cannot change the title, let us think of inspectors as *school advisers*, who are slow to censure unless suggestions have been ignored and regulations infringed.

In nine cases out of ten a lesson given before the inspector is of no value as a test of teaching ability; neither teacher nor pupils are in a normal condition. The inspector can learn far more if he asks the teacher to question a class on a recent lesson, or, still better, if he questions the class himself; if he knows his business he will soon discover the manner in which the subject was presented.

At the same time, in his desire to remain on friendly terms with the teacher, the inspector must not pass by unnoticed matters of organisation and method that need reform. Some of the American schools, especially in the smaller cities, are good examples of what a complete absence of inspection or external criticism may lead to; with an environment of progress the schools are stagnant.

It is sometimes said to be undignified for an inspector to teach; the reply is that a good inspector cannot help teaching—it is his only method of getting into intellectual touch with a class. The inspector is, after all, the educational doctor of the school. He calls in a specialist when the case is outside his own experience; he should always adopt a cheerful bedside manner, but he must see that his prescriptions are carefully compounded, and that his orders are faithfully carried out; before he prescribes he must discover *why* the patient is sick.

The inspector is often placed in a serious quandary when writing his report. If it is constructive, as it should be, the school committee or governors are apt to mistake suggestion for censure, and often form very unjust opin teaching staff. Even if the committee under report, the parents often do not, and it is doubtf the publication of such reports is desirable.

The frequent changes of inspectors in a given a very disturbing effect on the work of the schools a considerable time to know a large number of s teachers, and first impressions are sometimes v inspector must be left for several years in the sa before his constructive work can bear fruit.

One of the chief charges brought by teachers present inspection system is the want of unifor spection standards. What passes for "good" inspector is only "fair" with another. The remed the chief inspectors. They should see that the i to inspectors (which are the common property and inspectors) are clear, definite, and sufficient these are strictly observed. More frequent among inspectors, and a loyalty to the decis majority, are desirable; there are very few qu which real disagreement is possible.

In conclusion, it may be pointed out that th has a magnificent field for scientific research a He can watch, foster, and institute educatio ments of all kinds; and by encouraging teach together to discuss the details, aims, and meth professional work, in which he should show k himself, he can secure educational progress in hi influence.

THE PLACE OF THE MOTHER T IN NATIONAL EDUCATION

By Prof. H. C. WYLD, B.Litt.

THE mother tongue is a subject of study whi place in the ordinary curricula of secondary s which is provided for only in a somewhat speci in the universities, and therefore cannot be sa trate the fabric of national education very de is, however, the position of the native langua country.

An elementary but systematic study of th language has a general and special educational

I. *Suggested Division of the Subject in the* The methods of "nature study" should be applie *English*, and the native language should be consi field for observation.

Such treatment has a threefold value: (*a*) cul a fresh set of observational faculties—at pres ignored by educationists—and consequent pro general mental alertness; (*b*) the laying of a s for the study of other languages at a later date; (tion for a true view of the nature of language in with modern linguistic knowledge.

We should use the native language as an i for linguistic training: it should be the centre an point of all language teaching.

II. *The Historical Study of English.*—Th methods of grammar teaching are mechanical interesting.

The cardinal principle of instruction in grammar should depend upon the relation of with the practical observation of living spoke We must keep in touch with realities if we wish properly the facts of linguistic development. The of evolution can only be learnt from a knowle

[1] Abstract of a paper read before the Educational Scien the British Association at its meeting at York, 1906.

guage of the present day in which they are in

re (1) we should make the utmost of the familiar spoken English, and learn many of the vital be derived therefrom before we inquire *how* and they arose. (2) We may then proceed to earlier English, and relate them with the speech of to- racts from Chaucer may be read at this stage ed systematically by tracing the changes which n place in pronunciation, vocabulary, accidence, al grammatical structure. Here can be learnt of the prevalence of law; that is, of tendency to ong regular lines in the development of speech. ast stage of the historical study of language in should be to ascertain in a general but definite elation of English to the other languages studied. e beginning of comparative philology.

uld make use of the natural and intelligent of the young concerning the meaning of the es between, say, English, French, and Latin clear ideas as to the historical connection of guages, and to explain the difference between ords and *loan-words*, and so on.

n of the whole course is not specialism, but an knowledge and understanding of the familiar eryday English speech.

ligent interest in the history of his own language knowledge of how the drama of development are as much an essential part of the liberal of an Englishman as the history of the political s of his country.

estion is, Can anything be done to make the e up the matter systematically and seriously?

TORY AND CURRENT EVENTS.

se who in August, 1806, read in the newspapers Emperor Francis II. had announced to the Ger- t his resignation of the Imperial Crown, there ably few who reflected that the oldest political in the world had come to an end. Yet it was Empire which a note issued by a diplomatist on of the Danube extinguished was the same which nephew of Julius had won for himself, against the the East, beneath the cliffs of Actium; and which ved almost unaltered, through eighteen centuries nd through the greatest changes in extent, in l in character, a title and pretensions from which nt meaning had long since departed. . . . From f Constantine till far down into the Middle Ages jointly with the Papacy, the recognised centre and hristendom, exercising over the minds of men an such as its material strength could never have d." With these words Dr. Bryce begins his ing book on the "Holy Roman Empire."

an age of celebrations, specially of those which ntenaries. Yet of all such anniversaries which kept this year are there more than Dr. Bryce's few" who are remembering the death of the npire? Prof. Freeman, who was never weary of the significance of the story which Dr. Bryce set is book, used to say that he had for some years mporary with a man who had been Roman Em- t this Empire has gone so completely out of human memory that its very name has been and many who ought to know better speak, and of Emperors of Austria and Emperors of Ger- e Empire of Austria dates from 1804; there never has been an Emperor of Germany. Before 1804 there were no Emperors of any country. The word "Emperor" was used without any addition; yet, to quote once more Dr. Bryce, "it may indeed be maintained that in point of law the Empire was never extinguished at all, but lived on as a sort of disembodied spirit." Where is it now? What relics of it survive among us, their origin not remarked?

"PARLIAMENT has adjourned." "We are to have an autumn session." Do our readers see the inconsistency in these two phrases? Do they know the fallacy in the first of them? The phrases do well enough for a newspaper poster or the headlines of a newspaper column, but they are not technically correct. Parliament does not adjourn. Each house adjourns from day to day, or over the week-end, or for a holiday. That is its own action, though Charles I. thought in 1629 that he could order the House of Commons to adjourn, as, indeed, his predecessors had done and been obeyed. Much of the legal argument in Eliot's case turned on this very point. And the adjournment of either house does not put an end to a session. That can be done only by prorogation, and prorogation is a royal action. The King prorogues Parliament, and summons it for a new session. Thus, when Parliament meets in the autumn, it will not be a new session; it will only be the continuation of the session just suspended. Bills will not have to be introduced again. Indeed, the reason for this "autumn session" is that the Education Bill may have time to get through.

MR. FENWICK, M.P., said to the Northumberland miners at their meeting in July last, when they had resolved to cease their opposition to the Eight Hours Bill, that "without abating one jot or tittle of the opinions he had expressed again and again in regard to the Bill, he, as their servant, accepted their verdict, and he hoped, on the other hand, they would accept the responsibility of what was to follow." Mr. Burke, M.P., told his constituents at Bristol, in 1780, that "if the people should choose their servants on the principles of mere obsequiousness and flexibility and total vacancy or indifference of opinion in all public matters, then no part of the State would be sound, and it would be in vain to think of saving it." He spoke also in the same speech of "the little, silly, canvass prattle of obeying instructions, and having no opinions but yours (his constituents), and such like senseless tales which amuse the ears of unthinking men." He said further, "I did not obey your instructions. No. I conformed to the instructions of truth and nature, and maintained your interest against your opinions with a constancy that became me. A representative worthy of you ought to be a person of stability."

ITEMS OF INTEREST.

GENERAL.

A CONGRESS on popular education is to be held on September 15th to 17th, in connection with the Milan International Exhibition. The subject to be discussed by the congress as a whole is "School in general, as regards the wants of the popular classes under modern social conditions." In separate sections several topics have been arranged for discussion: auxiliary institutions of the primary school; professional teaching for male and female workers; and popular general culture for adults. The general secretary of the congress is M. Angelo Merlini, Società Umanitaria, Via Manzoni, Milan.

MISS ETHEL HURLBATT, principal of the Bedford College for Women (University of London), has been offered and has accepted an appointment as Warden of the Royal Victoria College, McGill University, Montreal, and will leave Eng-

land at the end of the year. It is hoped that her successor will come into residence at the beginning of the Lent term.

MR. JOHN COBB, master of French at the Warehousemen Clerks and Drapers' Schools, Purley, has been appointed headmaster of the Archiepiscopal College, Halifax, Nova Scotia.

MR. H. H. ROBJOHNS, director of modern instruction at the Cheltenham Grammar School, has been appointed additional assistant in the Higher Education Department of the Education Office of the Kent County Council.

ALTHOUGH only two examinations, in January and June of this year, have been held under the present regulations, the Civil Service Commissioners have issued new regulations, to come into force after December 31st, 1906, for the open competitive examinations for junior appointments in the Supply and Accounting Departments of the Admiralty and in the Royal Ordnance Factories of the War Office, for second-class accountants in the Army Accounts Department and for examiners in the Exchequer and Audit Department. The limits of age are eighteen and nineteen and a half instead of eighteen and twenty. If an examination commences in one of the first seven months of the year, candidates must be of the prescribed age on May 1st of that year; if in one of the last five, on November 1st. The subjects are in three groups:—(i.) mathematics and English; (ii.) and (iii.) mathematics, French, German, Latin, Greek, history, chemistry, and physics. Of class ii. (lower standard), each subject carries 2,000 marks; of class iii. (higher standard), each carries 4,000 marks. From ii. and iii. candidates may select subjects, one of which must be a language, carrying marks up to a maximum of 10,000, making with the subjects of class i. (compulsory) 14,000 in all. The same subject may not be selected both in class ii. and class iii. The syllabus, defining the character of the examination in the various subjects, "will be issued in due course."

SCOTTISH.

THE Scotch Education Department is at present considering the advisability of altering the date of the Leaving Certificate examinations from June to April, and has invited suggestions or criticisms on its proposal from teachers and others interested. The advantages attaching to the present date are obvious in the case of schools whose holiday months are July and August, but in schools where the session is prolonged till the end of July, there has all along been the disadvantage that serious work is almost impossible after the examinations are over, and thus three or four weeks are to a large extent wasted. If the date were fixed just before the Easter vacation all schools would have an unbroken summer term for their ordinary work. In addition the results of the examination would be known before the schools closed for the long vacation. No doubt a good deal can be said for the Department's proposal, but the present arrangements are so convenient for schools closing at the end of June (and this comprises the large majority of schools) that any change will probably be strongly opposed.

MR. CATHCART WASON, M.P., has presented to the Secretary for Scotland a petition signed by fifty-two Scottish members, praying for an improvement in regard to the superannuation of Scottish teachers. The petition has been signed by all the Unionist members and by a large majority of the Liberal group. The memorial states that existing teachers in accepting the Superannuation Act had unfortunately placed themselves in a worse position than if they had refused to come under it, and had trusted t spirit of the various School Boards. The memo mit that this is not creditable to Scotland, an they will gladly support legislation to preve public servants who have devoted their lives t service from ending their days in want and p is the best news in regard to superannuation t heard for a long time, and Mr. Cathcart Wa the warmest thanks of every teacher for his connection.

THE Secretary for Scotland, in reply to a tion from Prof. Chrystal, chairman of the Edin mittee for the Training of Teachers, stat financial responsibility for providing education subjects has hitherto been borne by local man proposal, therefore, involving a transference of to the Imperial Exchequer would, he consider a grave innovation which it would be exceedin if not impossible, for the training committee This letter was considered at a meeting of the Committee, and it was unanimously agreed n take the provision of religious instruction, facilities to the Churches interested for carrying of the work themselves. Such religious instru form part of the regular curriculum, and w amined and the results entered in the final cert with the other subjects. In respect of the diffic by the Education Department, it is probab Churches will accept this compromise.

A MINUTE has been issued by the Committee on Education in Scotland, providing for the di the £13,000 that comes to Scotland as an e the £135,000 voted at the beginning of the necessitous School Boards in England. By the minute the Department undertakes to pay thre the educational expenditure of any School Boar beyond what is produced by a rate of eighteen pound. Thus if the total expenditure on edu parish amounts to £500, and an eighteenpenn duces £300, the Department will pay three-fo difference between these two figures, and the bu parish, instead of being £500, will be £300 (of an eighteenpenny rate) + ¼ of £200 (th between £500 and £300).

THE first exhibition of manual work under t of the Edinburgh School Board has proved a gr Crowds of people availed themselves of the op see the exhibits and to study the methods and important branch of school training. The ain the manual instruction in the schools is not t series of more or less useful models, but rath the opportunity of associating drawing on th common objects, and by means of the use form habits of observation, accuracy, and sound The objects on view serve to show that these large measure attained. Specimens of work d evening classes were also on exhibition. Here the aim of the teaching is different. Technical great desideratum, and the models comprise dows, casements, and intricate models of vari In connection with the exhibition lectures o phases of manual work were given by Dr. Gu Morgan.

MR. LOUGH'S committee, which was appoint sider Mr. Wilson's Education (Provision of Meal reported in regard to the Scottish portion of

evidence submitted to it was not so complete as gland. Although none of the Scottish witnesses recommended that the responsibility for the feed- ildren should be placed on the public authority, ittee adopts the view that there does not appear ient reason for refusing to the Scottish local s the permissive powers which it proposes should ed to England.

ING to the new regulations for the training of junior students must receive their instruction at ols as are approved by the Department for this egard being had to the accommodation, the equip- d the provision of a sufficiently qualified staff. rtment states that junior-student centres should rule, secondary schools, or schools the staff and of which fit them to prepare pupils for the full Certificate. Applications for the recognition of or-student centres should be made not later than st, on special forms which can be obtained from rtment. Along with this form of application must submit a curriculum satisfying the require- the regulations on the junior-student stage. It specially noted that the curriculum to be sub- st include a scheme for the practical training of ents in the art of teaching each of the primary- bjects. Managers must also be prepared to the selected centres a separate master of method, apart one of the existing staff, and entrust to supervision of the practical training of junior

IRISH.

partment of Agriculture and Technical Instruction for the forthcoming year (1906–7) a revised r the administration and distribution of grants ical schools and science and art schools and t does not apply to day secondary schools, and is or one year, but after August, 1907, will be y. The idea of the Department is that each whom payment is made should adopt a course beginning with the preparatory year, except, in the case of those who are otherwise qualified specialisation. Students must be more than ears of age on December 1st, and no grants will r students for whom any grant is made by the nt under other regulations or by the Board of Education.

ntion of the Department is to prevent specialisa- ut a proper foundation, and the work is there- ed into two parts, a preparatory course and courses. To enter the preparatory course a ust be qualified to be placed in the sixth class ol under the National Board. The subjects of in this part will be: (*a*) English, (*b*) elementary cs, (*c*) elementary science or drawing, and each t be taken. A student will be eligible for grants vision for two years, and may then specialise. hen take up a systematic course of study in two subjects, designed to extend over three or four student may omit the preparatory course if he the Junior Grade of the Intermediate Board or lent. The subjects of instruction are grouped heads: A. commercial subjects; B. (1) modern (2) mathematics, (3) higher commercial sub- science (pure and applied); D. (1) handicraft, ic science; E. art subjects. Grants will be paid total number of hours of attendance of fully-qualified pupils at rates varying from 2*d.* to 1*s.* 9*d.*, and these may be increased or decreased by one-tenth upon the report of an inspector.

THE rules apply mainly to evening classes, but may be applied also to day schools for apprentices and others engaged in business, to schools of art, to teachers' classes in technical schools, and to training colleges. The Department proposes to form a register containing the names of teachers who, after provisional recognition by the Department in any subject, have taught a class in that subject to the satisfaction of the Department for at least one session. A register for duly qualified teachers in all subjects is very much required in Ireland, and now that the English register is as good as abolished, those interested in Irish education should press for the extension of the principle adopted by the Department to all schools and branches of teaching; for if a register is needful for technical schools, why not also for day secondary schools?

IT is when one bears in mind general questions of education such as this that one finds the latest Report of the Intermediate Board (that for 1905, published this summer) so disappointing—a bare recital of facts without comment and without any appreciation of the position or progress of Irish secondary education in relation either to Ireland itself or to other countries. Former reports contained some reference to the desire of the Board to introduce inspection, but in this report there is not a word upon the subject. Has the Board abandoned its position? Last winter there was a loud outcry from managers and teachers about the diminution of the grants made by the Board. The Board passes this by; it neither expresses sympathy for the sufferers nor suggests any remedy for the future. To judge from its report, Irish education might be merely an inanimate machine, not a human instrument full of possibilities.

THE facts presented by the report may be briefly summed up as showing an increasing desire on the part of the Irish public to avail itself of secondary education with a diminishing income on the part of the Board which supervises it. The first is wholly satisfactory, the second wholly unsatisfactory. The number of students presenting themselves for examination in 1905 was: boys, 7,018; girls, 2,659; total, 9,677; the highest on record, being an increase on 1904 of 742 boys and 405 girls, or a total of 1,147, or 13·4 per cent. The number who passed was: boys, 4,942, or 70·4 per cent.; girls, 1,723, or 64·8 per cent.; total, 6,665, or 68·9 per cent. This percentage is higher than in any year since 1900. The number of exhibitions awarded was: boys, 258; girls, 84; total, 342. The amount of the school grants was £49,922; this divided among 288 schools shows an average of £173. If the scale of payments had been on the same basis as in 1904, £72,306 would have been required, so that by comparison the schools suffered to the extent of £22,384. But the Board's income decreased from £56,156 in 1904 to £50,385 in 1905. Besides the general grant, the Board allocated £2,784 in bonuses to schools for choirs and orchestras, and an additional £190 as prizes at a special competition for choirs and orchestras. The amount of the Preparatory Grade Prize Fund for 1905 was £1,956.

IF we look at the individual subjects, the lowest percentage of passes is in Greek, 60·9; shorthand is 65·7, and geometry 67·6. No other percentage falls below 70, while in nearly every science subject the percentage is more than 90. Next to English literature and composition, which is compulsory, and had 9,659 candidates, the highest

n the Method of Science. Edited by Dr. T. B. .+249 pp. (Clarendon Press.) 7*s.* 6*d.* net.—mer meeting arranged at Oxford last year by y for the Extension of University Teaching, a ctures was given by several distinguished men the general theme being the application of ethod in various departments of research. es provided the material for the volume before Case deals with scientific method as a mental Prof. Gotch with the rise and development of science; Prof. Sherrington with the scope and physiology; the late Prof. Weldon with the inheritance in animals and plants; Dr. W. with psycho-physical method; Dr. Fison with n of double stars; Sir Richard Temple sketches ment of currency and coinage; Prof. Flinders ibes the implications of archæological evidence; itor, Dr. Strong, Dean of Christ Church, in-far the investigation of history may be pursued principles. The collection thus represents the ding authorities upon some of the most interest-s in science, with particular reference to method tion, classification of facts and soundness of We should have been interested in a statement e of scientific method in education, but the gates would probably have had a difficulty in useful discourse upon the subject; as it is, the ides a very readable account of the foundations ucture of science, and forms an excellent intro-a work like Prof. Pearson's "Grammar of

trations for the Study of Architectural History. the complete Series of 300 plates, as appearing story of Architecture on the Comparative y Prof. Banister Fletcher and Banister F. We recently reviewed in these columns Mr. tcher's admirable book on architecture. The w sends us the whole series of plates, printed sheets, and enclosed in envelopes, for class are classified thus:—(1) Classic and Early o plates, 4*s.* net; (2) Mediæval (Romanesque , 102 plates, 4*s.* net; (3) Renaissance and plates, 4*s.* net; (4) Non-Historical, 36 plates, or 13*s.* 6*d.* net in all. Orders must be given than five copies of any one section, or two e whole collection. Lantern-slides of all the be had from Messrs. G. Philip and Son, 32, The work is a standard work, and needs no mendation from us. A series of large lecture in. × 27 in.) are also advertised, of which par-be obtained from the publisher.

d Sport: Collections of a Busy Life. By Tom .+268 pp. (Elliott Stock.) 6*s.* net.—This is of disconnected and discursive anecdotes, all her, on sport and school, fishing, country life, e ears, bridge, Greek, King Edward's School at , Norway, with a few chestnuts about Calverley It is really quite entertaining. Most of the new, being Mr. Collins's own experiences; all nocent and harmless; and there is a great deal pear to be excellent rules about fly-fishing, , and other kinds of sport. We are bound to e is very little school in the book, which is ting to us professionally since it shows the ffects of local influence on a good grammar ilst the country as a whole is indifferent to educational questions, and the Board of Education is afraid to act on its own responsibility, the local bodies have a distinctly pernicious influence. Mr. Collins seems to have been a very good headmaster, respected by all his pupils, and we wish he had told us a little more about school and less about sport. The most remarkable anecdote in the book is that of "Lockyer, the great wicket-keeper." "His hands were a sight; the palms were driven in and the backs were convex from the constant impact of the ball." He must have been indeed a sight amidst his fellows with their convex palms and the concave backs of their hands.

Fictitious and Symbolic Creatures in Art, with special reference to their use in British Heraldry. By John Vinycomb. Illustrated. xvi.+276 pp. (Chapman and Hall.)—This is a very entertaining book. It is not a history of symbolism—that much needed work for which we are still waiting—nor a manual of heraldry, but it is a sketch of the symbolic treatment of living things in art, with special reference to heraldry. It begins with angels and archangels, and ends with the sea-dog. Although the treatment is somewhat scrappy, yet all through the author gives one the impression that he knows his subject, and he does not fail to bring out the principles which underlie it. The illustrations are excellent, and the book gains vastly in value by being printed on real paper. If we were to mention a quarter of the odd monsters in this Man's Book of Beasts, we should fill this page, so we must be content to ask whether our readers know what is a Cat-a-mountain, an Opinicus, a Tityrus, a Mantygre, a Baphomet, or a Manticora? Here he will find them all, along with Salamander, Basilisk, Cockatrice, and—choicest creature—the "Panther Incensed" (p. 200). There is an odd misprint on p. 220—*Emipusa* for Empusa.

Reform in Primary Education. By Dr. Hagmann. 1–161 pp. (Williams and Norgate.) 2*s.* 6*d.* net.—The last sentence of this book (admirably translated by the colleagues of the author at St. Gall) shows the spirit of the work: "The art of teaching is based on self-discipline: the gift is based on the longing desire to impart knowledge to children in a kind and loving manner: the art of teaching is a matter of the intelligence, the gift one of the heart." The writer might, in many ways, have been writing in England; at least, he is profoundly discontented. The perusal of his chapters on drawing, history, arithmetic, leaves us in some doubt of the vaunted superiority of the Swiss schools; and the suggestions are all good, but not very novel. When will writers attack the kernel of the difficulty—the large numbers in classes? We are greatly astonished at one sentence: "Physical geography has no connection with history." Surely no geographer would refuse to write: "History *is* physical geography, and physical geography *is* based on geology."

The Girls' School Year Book (Public Schools) with the Index of Schoolmistresses. Issued under the direction of the Editors of "The Public Schools Year Book." 420 pp. (Swan Sonnenschein.) 2*s.* 6*d.* net.—This work of reference is intended to do for girls' schools what the well-known "Public Schools Year Book" has long done for boys' secondary schools. Though the book may be commended as being a good first attempt at providing a trustworthy guide to public secondary schools for girls, it is at present by no means complete, several important and well-known schools having been overlooked. The publication will receive a hearty welcome from secondary-school mistresses.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Subtraction of Vulgar Fractions.

THE convenience of always writing decimal or fractional part of a logarithm positively suggests an analogous method of treating the subtraction of vulgar fractions. Suppose, for example, it is required to reduce to its simplest form the expression $2\frac{1}{2}+3\frac{7}{8}-4\frac{5}{6}+8\frac{3}{4}-5\frac{7}{10}$. The method most frequently adopted, perhaps, for the simplification of an expression like this is to reduce the mixed numbers to improper fractions, express the fractions as equivalent fractions with a common denominator, and so on. A better method, of course, is first to separate the integral and the fractional parts of the mixed numbers in the given expression and write the expression in the form

$$2+3+8-4-5+\tfrac{1}{2}+\tfrac{7}{8}+\tfrac{3}{4}-\tfrac{5}{6}-\tfrac{7}{10}.$$

If, however, in separating the integral and the fractional parts of the mixed numbers we increase by 1 the integral part of every mixed number preceded by the minus sign, and instead of the fractional part preceded by a minus sign write its defect from 1 preceded by a plus sign, the expression will take the form

$$2+3+8-5-6+\tfrac{1}{2}+\tfrac{1}{8}+\tfrac{3}{4}+\tfrac{1}{6}+\tfrac{3}{10},$$

and the simplification of the fractional part will be effected by addition. A proper fraction preceded by a minus sign would, of course, be replaced by $-1+$ the defect of the fraction from unity.

The adoption of this method would, I believe, in most cases facilitate the reduction of fractional expressions like the one given above, and, while assisting beginners towards a proper understanding of the use of the minus sign, would obviate the risk of the mistake which not only beginners, but more advanced pupils, are apt to make—the mistake of neglecting the minus sign where the sum of the negative fractions exceeds the sum of the positive.

W. B. MORREN.

Aberdeen.

An Introduction to Astronomy.

IN the July number of your valuable magazine, in a brief review of my book on Descriptive Astronomy, the following sentence occurs: "In stating the work of practical astronomy, Prof. Moulton omits mention of spectroscopic observations, but it is scarcely too much to say that they form the most important part of modern investigation." While the book undoubtedly suffers much from sins of omission, the first part of the statement will give the reader such an erroneous idea of the stand taken in the book respecting spectroscopic investigations, that I shall esteem it a favour if you will quote the following from p. 14 of the preliminary outline, where it is aimed to give a brief glimpse of what is now important in astronomy:—

"The spectroscope, which is the chief instrument of astrophysical research, has been in active use in astronomy less than fifty years, yet its contributions to knowledge have been truly amazing. The results which it has furnished are the more precious, for they cannot be obtained in any other way; and, indeed, until after the application of this instrument to astronomical investigations, no one had the boldness to hope that the regions which it has revealed would ever be accessible to us. It furnishes us with no less marvellous information than the chemical constitution of the sun, and of stars so remote that it takes their light many years to come to us; it d for us luminous gaseous bodies from those whic or liquid; it tells us much of their temperature a condition; and it gives us the means of deter rate at which we are relatively approaching tow receding from, them. Its application to a problems has been only begun, and no one what the future developments will be."

This will indicate the frequent, though adequate, references to spectroscopic work. F pp. 397 to 410 are given entirely to the discus principles of spectrum analysis. The spectrohe explained on pp. 429 to 431. The applications to cation of the stars, the determination of stellar &c., are explained in as much detail as was th able to an elementary text-book. F. R. M

The University of Chicago.

ABSENCE from my library prevents me from Prof. Moulton's book, but my recollection is early page he states the work of practical astro as mentioned in the review, does not include s studies. The suggestion was not made that th spectroscopic research were neglected, but only work was scarcely presented in true perspec sentence in the review following that quote Moulton reads: "It is only fair to state, ho astrophysical inquiries are surveyed, though th cannot be considered altogether adequate from view of the contributions made to this branch o by British spectroscopists." THE R

Geometry in Schools.

IN your review of my "Manual of Geometry is expressed that the course laid down therein considered sufficient for the school treatment o Since the course definitely follows Schedules A a Cambridge Previous Examination, and indicate all the theorems, which are followed by theoretic in every case, it might seem to a less partial my own to be sufficient for candidates for that e and others of a similar scope. This scope is well known; Schedules A and B cover much ground as the first six books of Euclid. Wha be the defects of the "Manual," it does not extend further than this. W. D.

Eton.

IT is, we heartily grant, unfair to an author him for not doing what he expressly states h intend to do; but we understood from the the "Manual" was meant for a school co metry, and the reference to Euclid as a unive seemed to us to have little meaning except on tion that a deductive course of geometry on Euclid was unsuitable for schools. A schoo geometry should, we think, in its later s rigorously deductive as Euclid's geometry, embrace more than is included in the "Manu ever excellent the Cambridge syllabus may be, i unreasonable to suppose that schools are boun themselves to it as the final expression of what a school course. THE E

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To face first matter.

The School World

A Monthly Magazine of Educational Work and Progress.

4. OCTOBER, 1906. SIXPENCE.

SCHOOL LIBRARY AS AN AID TO FORM-TEACHING.

By the Rev. J. M. LUPTON, M.A.
t-Master and Librarian, Marlborough College.

title of this paper suggests an obvious chotomy—teachers and taught. The rary, properly used, should widen the re of the teacher, or make it more precise; help the taught to supplement the meagre ion of the text-book, or to follow up the which the teacher has awakened. But an old proverb about bringing a horse to r, and a school librarian is fated to pass many hours in his library, watching the surface of a pool to which few ever d fewer still come to drink.

should be so is to some extent disappoint- humiliating. There is our pool—if we p up the metaphor for a moment—full of water, cool and inviting. It is set—at now of several that are—in a choice spot cademic grove. All that surrounds it is once to charm the eye and invite to n. One might suppose that thirsty uls would come and drink deeply of its nd that those whose privilege it is to be among the throng would be among the to slake their thirst. What does one ractice? At preparation times, to drop phor, the door is besieged by an eager who strive to secure the best seats. At nes a faithful few, busy, for the most th the preparation of tasks. And at gain, a solitary librarian musing amid ows till the summons of a strident bell exchange the silence of the empty room ustle of dinner.

hough I sit here, pen in hand, to suggest ys in which the library may be made to rger part in the economy of school life, lined to doubt whether any great change xpected at present, at all events, in the oys below the highest forms. School life ll organised now for browsing—if I may d to borrow the word from Ruskin—in a brary to be possible for either boys or except to a very limited degree. For worse, the old days of slackness in form, and plenty of leisure out of school, are gone. A boy now, and his master too, has his day thoroughly filled up. He is doing allotted tasks for a considerable part of the time, and playing allotted games for much of the remainder. The gain in order, discipline, and efficiency is considerable; but a taste for independent reading seems still to wait the coming of the fairy prince. It is all very well to refer a boy to Macaulay's "Warren Hastings," or to "Barnaby Rudge," by way of supplementing his history, but your businesslike youngster may be pardoned if he declines the tempting bait on the ground that, where he hasn't time for both, the allotted lesson "pays" better. And shall I, his form-master, preach neglect of "prep."?

There was an institution of my youth that sought to combine the claims of preparation and independent reading in a somewhat ingenious way. It was known familiarly as "Sunday Q's," and, for the benefit of those who do not know it, I may perhaps be allowed a digression to describe it.

The theory was, I believe, that the New Testament was being regularly taught in form, while the Old Testament was left to be got up out of school. Consequently every Sunday morning we found—or our fags found for us—a piece of paper on the class-room door containing some six to ten questions, somewhat of the following description:—

(1) Discuss the reading and difficulties of St. Luke ii. 2.

(2) Write a brief account of the reign of Jeroboam II.

(3) What do you know of the Robber Council?

(4) Give a short account of your views on the duty of almsgiving.

Armed with a copy of the questions, a Maclear, and a Pinnock, one went to the school library. Alford, interpreted by some master-mind, to whom symbols resembling those of algebra truncated were but child's play, furnished the answer to No. 1. Pinnock or Maclear did No. 2. "Very good," you will say; "now came the independent reading—the introduction to more alluring bye-paths of knowledge."

Not a bit of it! The library was presided over by a gentle old man of great reading and infirm health, called—for no other reason that I could

discover but *metri gratia*—"golden 'Ιωσήφ." To him, then, turned the inquiring throng. "I say! Joseph! Give us a book on the Robber Council." With unfailing skill, born either of long practice or profound knowledge, he would refer to volume so-and-so of some "Abridgment of Church History," and the passage, dictated by a clear-voiced youth, and duly altered by each scribe as he went along, was bodily transferred to the paper as the answer to No. 3.

The attempt to stimulate original research, or original thought, in answering No. 4 was equally doomed to failure. If neither the custodian, nor any book to which he could refer us, produced satisfactory views on "almsgiving," we had recourse to a "symposium" of the kind which has lately become familiar in magazines that wish to inform the impartial mind. We laid our heads together and produced a combined answer, of which each writer took down such percentage of the whole as industry, inclination, or a desire for marks dictated.

I expect the discerning reader will have seen from this the weak point of referring boys to books in the library, by cunningly devised questions or otherwise, as a means of persuading them to read more widely for themselves. From the nature of the case two things happen: (1) the library only contains one copy of the book recommended, and (2) the boys all want to use it at the same time. Hence the form-master, as it seems to me, is driven to one of two alternatives. Either he must be content to let the eager and industrious avail themselves of the wider source of information, and make no effort to exact it from the lazy; or he must be content to take a combined answer, representing the independent labour of one and the unintelligent copying down of many.

For the same reason I have found it practically impossible to refer to a "good poetical translation" of a classical poet, or to send readers of the *Alcestis* to study Mr. Browning. Either one shrill voice reads it out to the rest, which is trying to those who are otherwise employed; or one, speedier or more pushing than his fellows, secures the coveted volume, and the rest are left smarting under a sense of injustice.

I am afraid the only practical plan seems to me to be for the form-master to read passages to his form and explain, as he goes along, the excellences of what he reads, and why it is superior to the jargon into which boys conventionally translate their authors. Any master who does so is certain of a welcome, and a hearing at least outwardly attentive. I believe, however, that if he does this, except as an occasional surprise, he will find that the speculative youth will neglect to prepare his next lesson, and a few questions on what has been read will lead him to doubt whether the attentiveness was not assumed, and whether a large number of minds have not all the time been engaged in computing the chances of victory in an approaching house match.

Much the same difficulty has to be faced also in the teaching of history. It is tempting to think that the school library is at hand to supp meagre information of the text-book. I all the boys must be provided with cop work to which reference has been mad the form-master must be content to ho few of the better boys will have read selves, and to know that the majority o have not.

There is not, to my mind, the same ob reading aloud to the form selected pass a larger work on history, that there was i of translations of an author. The boys a ready to feign attentiveness, but it is stimulate attention and to fix what has by subsequent questioning. And eve majority assimilate but little, it is worth face that, in order that the better boys r by the flood of light which a passag Green or Froude throws on the scattere lated facts of the book read in form.

Do I seem needlessly pessimistic about of a school library as an aid to being form? As I think of the title of this pap to be playing the part of Balaam.

From the point of view of the the I am supposed to be defending, the case what desperate. The school library cann opinion, be a direct aid to form-teachin to a very limited extent. But, if I migh the proposition, the form-teaching ough considerable aid to the use and appreciati school library. If the master is conten seed in faith, and not expect immediate re may yet have to thank him for a harve reaping.

For the case, I take it, is somewhat thi public schools have been for some years ing our boys in body and character, and also—but the latter along rather limit Without going into so wide a question as t of our public school education, most admit that the parents of to-day are nei read nor naturally fond of reading, and t take after them. Their daughters are an education which closely resembles th boys, and is not, so far as my observat breeding in them any great love of re its own sake. It seems probable, there the next generation will inherit a distaste from its parents on both sides. And th made worse by the fact that the masters c are drawn from the same boys, of an o with exactly the same tastes; so that we vicious circle. There are, it is true, examples to the contrary. But, after failures, headmasters seem shy of appoin of a studious turn, because such men h found in the past to be incapable of keepi and their lack of sympathy with school g pairs their efficiency as house-masters.

In saying all this, I am far from suppo common indictment of our public schoo Its faults are patent enough. But I hav met a critic who, really knowing the fac suggest a practical remedy. It is easy to s

be fonder of books—both masters and I quite agree. But I have not yet heard ipid method which shall enable us to keep ts of our present system—and they are l great—and add to it a love of learning for sake. But I believe we can lead to an nent *by degrees*, if we are in earnest about e prepared to work for posterity.

are imitative creatures, and are quick to e tone of those set over them, provided latter are efficient and sympathetic. That eason why discipline has improved so in the last few years. The old days of (or 'ragging') old So-and-so" are one. The master of to-day is, as a rule, athy with boy-life, and his form can themselves that he knows what he is Consequently, his views and character- mmend themselves for imitation. The idious and scholarly men, to whom I re- while ago, were sometimes neither efficient pathetic. Their form-rooms were notori- ar-gardens, and they were rather afraid of s, as creatures they did not understand, whom they had little sympathy.

emedy, I respectfully submit, lies with . But, like most remedies, it de- me self-denial. If we can show our boys urselves are honestly fond of books, fond g, fond of study for its own sake, I be- shall implant in them the same tastes. nes hope, if we set about it wisely, that we ceed in doing so without forfeiting that of the body, that development of manly r, which few of its critics deny to be the our present system. But our fondness ng must be genuine and honest. Few are to detect affected zeal or official eagerness They know, if anyone does, where our e, and they draw their own conclusions. itless to lecture in form, however elo- on the beauties of English literature, if it that we never dip into it unless obliged.

then, though in a less direct way than the he paper suggested, the school library is to l to form-teaching. Form-masters are to m it that genuine enthusiasm for good which they will be able to pass on to their nd they, in turn, will learn to look on the brary as a place in which they will be o find what they have learnt to want.

I say, this will take time, and we must nt to sow, and let others reap. But I be- *an* be done, and I hope it *will* be done. If future generations of English schoolboys better educated than they are at present. it can be done without the sacrifice of which we now hold valuable, by extend- rinciple of *selection*. A schoolboy's life is l by selection, is it not? You confine him in studies, certain games, certain meals u believe to be best for him. What you do in this connexion is, I conceive, to help *elect for himself* the right kind of reading isure time, and to train him to believe that *some* of his leisure time might well be given up to profitable literature. It is easy to rail at "ephemeral literature": railing never yet converted any boy who was worth conversion. The more excellent way is to lead the boys to think, by showing them that *you* think, humane letters to be more worthy the study of educated Englishmen than cheap magazines. Fortunately, the enterprise of publishers has enabled the antidote to be bought as cheaply as the poison.

Do I seem indefinite and vague? I hope not. I am suggesting two things on our part—a change of attitude and a deeper knowledge; and then I think we shall in time secure what we all desire. What I deprecate is violent change or angry abuse. The man who is for ever decrying athletics and preaching books has little sympathy from me. He is wilfully blind to some of the gravest and most far-reaching facts of school-life. A sudden change on our part, if that were possible, would puzzle the boys, and would not carry them with us. We need rather to realise, and to let them see that we realise, that the pendulum has swung too far in one direction, and that we have lost, to some extent, our sense of proportion. It ought not to be impossible, with the examples of Sir Thomas More and Sir Philip Sidney before us, to train up our boys to believe that an Englishman may be a master of all games and pastimes, and yet have a mind well stored with learning, and taking its true delight in study and reflection.

PICTURES FOR SCHOOL DECORATION.

By E. M. Carter,
Art Master, Whitgift School, Croydon.

THE recent exhibition of German lithographs selected by the Education Committee of the London County Council for distribution among their elementary schools, gives considerable food for thought concerning the place and purpose of pictures in schools, and the decoration of schoolrooms generally. The exhibition in question—which incidentally roused the wrath of the *Times* critic, and drew a letter of protest, on the usual patriotic grounds, from a firm of British fine art publishers—consisted of seventy specimens of coloured lithographs, chosen from among some 300 reproductions of the works of German artists, which Messrs. Asher have recently introduced to this country. Twelve of these lithographs had already been seen in London at the International Exhibition, where they attracted considerable attention—others have been reproduced and favourably reviewed from time to time in the leading art monthlies.

It was a happy thought on the part of the London Education Committee thus to give the public an opportunity of inspecting the drawings collectively under such favourable conditions, and although one might here and there wonder at the choice, in view of the object for which

they were selected, it must be admitted that the collection was very representative of the series. As regards the "support home industries" aspect of the affair, criticism is at once disarmed by the statement in the catalogue of the exhibition that "The object of the Education Committee in holding this exhibition is to encourage the production of pictures of a distinctly English nature." Suggestions follow for suitable subjects, as, for instance, landscapes characteristic of different parts of England, views of places with historical associations, castles, cathedrals, ruins, and so on. Search among the publishing houses and art supply associations has failed to disclose the existence hitherto of any such, or similar, series, and as the educational value of such works is undoubtedly very great, it is to be hoped that the Council's suggestion may lead to some practical result.

The whole question of the pictorial decoration of schools is one which demands much more consideration than it apparently receives, if one may judge by the stray maps and photographic athletic groups, which so frequently form the sole embellishments of the walls of a secondary school for boys. As to the extent to which pictures should enter into the equipment of school premises, there are, of course, many and diverse opinions, from that of the man who prefers to teach amid surroundings of a barrack-square simplicity—that nothing may tempt the eye to wander—to that of the teacher who covers his walls with a heterogeneous collection of engravings, photographs, lithographs, pressed flowers, and stuffed birds:—"Anything," says he, "is better than ugly bare walls," and accordingly anything that is framed and glazed goes up to break the monotonous surface.

Granting, however, that pictures are to have a place and a legitimate purpose in our schools, the question of the style of picture demands careful consideration. We may divide school pictures roughly into three classes, each of which demands an equally important place in our scheme of decoration:—First, those which are purely decorative, and give pleasure and relief to the eye solely on account of the beauty of composition or scheme of colour. Secondly, reproductions of famous or popular (the two terms are not necessarily synonymous) pictures. These sometimes possess the qualifications of the previous class, but frequently their sole claim for recognition rests on the reputation of the original, the beauties of which, through some cause or other, are often lacking in the reproduction. In the third class we may place pictures which are interesting as bearing directly on the work of the school, such as scenes and episodes in history: battles, portraits, buildings, and architectural details; views of towns and cities; and pictures illustrating geographical and physiographical features, and so forth. If pictures can be obtained which combine the qualities of these three classes, so much the better; but if not, it were as well to bear their special features in mind when the question of their comes up for consideration.

It would be futile to attempt to lay do for the hanging of pictures, as much upon the taste and fancy of the hanger, the spaces at his disposal; it may be however, as a broad general principle, th ture should be hung where it will be bot and accessible, which observation, th may savour of triteness, is neverthel ranted by the often prevailing condition c How often does one meet with pictures out of eyeshot, or placed over a projec board, or behind a door, or fenced in by cade of desks? Or, again, in a matter ing, placed so as to catch a full refl an opposite window, or placed on a wall between two windows? No doubt these disabilities are due to the exig building and space, but frequently a r thought and trouble will circumvent th transform what was merely a wall-ornar an interesting, and, perhaps inspiring, pic picture-rail round the room, seven or e from the ground, simplifies matters ver and saves much nail-driving and mutilati wall.

An environment of beautiful pictures, mony with the other surroundings, will c conduce largely to a refinement of tast cultivation of artistic perception and dis tion in a child of sympathetic temperam the average child, however, something m necessary. It is not sufficient to cover th with reproductions of famous pictures pect the child to imbibe art culture fr mere contemplation thereof; the pictu create a transitory interest, but after a ti become commonplace through familiari are accepted simply as a part of the wall tion. If the picture is to fulfil its funct an important factor in the educational sc is essential that it should be the subject quent reference, either with regard to its qualities, or as it may have a bearing o some way illustrate or amplify some under discussion. A highly interesti valuable lesson may be given on the lines and sympathetically indicated by the lat Rooper in his "School and Home Life," form of a lecture descriptive of a selected dealing with its subject, composition, tre technique, history, or moral interest; t with particulars of the artist, period, con ary art, and so forth. The subject is ca infinite expansion.

Or, again, as the pictures in a school d represent several reproductive process might be utilised to illustrate an occasio ture on the various processes of engravin graphy, zincography, and the more com the modern processes of reproduction whi the photograph for their basis. Such a of lectures would do much to dispel the haziness which exists in the popular m

he juvenile mind, respecting pictorial wherein pictures are classified either d-done" or "printed," generally to ragement of the latter, in which class ied etchings (which, by the way, is ar name for pen and ink drawings and awings generally), original engravings, graphs. References of this kind will add considerably to the educational the pictures, opening up for the n interest and delight in art which would otherwise lie dormant; but will also en- to extract a greater amount of pleasure r contemplation in proportion as they d and appreciate the difficulties and to be surmounted by the artist and in their production.

rman lithographs to which reference dy been made are the outcome of a inaugurated some four or five years 250 men from all parts of Germany, ng many phases of art work, gathered n Dresden to discuss ways and means ng art culture among the people. Syn-, as it did, with the dawn of the period sts of all countries were turning their to lithography and awakening to a e of its possibilities as a means of ex- t was perhaps inevitable that this move- art expansion should find its outlet in y. The matter was taken up by two ling publishing houses of Leipzig: those Teubner and R. Voigtländer—which is- time to time replicas of the works of ding artists in the form of auto-litho- hat is, lithographs in which every stone and coloured, and every printing super- he artist. As is always the case when himself uses the tools, the result is sfactory than when he gives his design cuted by some professional craftsman, kilful he may be. In this case, instead a "reproduction," the result is to all d purposes an original work, preserv- e freshness and vigour of the actual ori- ving.

llection, including a series by Fischer ke, of Düsseldorf, and others from ow amounts to upwards of three hundred and ranges through a great variety of That the whole series should reach the l of artistic merit was not to be ex- t the inclusion in the list of such works nd's *Matterhorn*, Georgi's *Pflügender* ese's *Hünengrab*, Volkmann's *Frühling*, *serne Wehr*, and many others by artists ental repute, is sufficient guarantee that hem reach a high standard of excellence. any subjects represented, perhaps the s claim chief place in our consideration, ccount of their individual merit and of liar adaptability to school decoration. es the artist has treated the subject in tly decorative style, dealing with the n in a broad and vigorous manner, and eliminating all obtrusive detail, without, however, sacrificing anything of fidelity to nature. The colour schemes are simple and harmonious, broadly grasped and expressed, and admirably decorative, realising frequently some most striking effect of light and atmosphere, and occasionally rising to a considerable degree of poetical feeling. Apart from their decorative qualities these pictures possess an educational value, inasmuch as they illustrate the topography, architecture, costume, and other features of a foreign country, and may thus serve as subjects for reference during the geography, history, or language lesson.

Two other recommendations we may note in passing are the size and the price. The largest pictures measure about 40″ × 30″, and the prices range from 9*s.* to 2*s.* 6*d.* each. The entire stock may be seen at the offices of Messrs. Asher, of Bedford-street, which firm also issues an illustrated catalogue of the series, which may be had for the asking.

The charming colour prints of Henri Rivière—which have long been obtainable from the Art for Schools Association, and are still unsurpassed for their beauty of conception and delicacy of colouring—may be placed in the same category as the German lithographs as coming under the first head of our previous classification.

With regard to the second of these divisions, the work of Mr. Frederick Hollyer and of the Autotype Company (to mention but two of our well-known firms) is so familiar as to render superfluous any advice as to how and where to obtain pictures of this description. A glance through the galleries or the illustrated catalogues of either of these firms presents an almost bewildering choice of reproductions by the most modern and perfect processes of the works of the masters, past and present. An attempt to do more than generalise upon the merits of the productions of these firms would soon exhaust one's stock of superlatives, suffice to say that as reproductions they are marked by marvellous fidelity to the originals, and that they frequently rise to a high pitch of artistic perfection.

Coming to the third and last of our arbitrary divisions we may find abundant material of this description in the publications of the Art for Schools Association, a society which was formed in 1883 with the object of supplying schools and other institutions with reproductions of well-known works of art at prices within the reach of all classes. Although the Association has done much valuable work in educating and elevating public taste in matters of art, having since its formation sold upwards of sixty-eight thousand pictures, besides circulating many others by means of its loan department, it is to be feared that it has not received that support at the hands of schoolmasters and schoolmistresses which the worthiness of its object and the excellence of its publications demand. The Association is now located at the Passmore Edwards Settlement, where, between the hours of 11 a.m. and 5 p.m.

the pictures may be seen on the walls of the corridors, and the various rooms of the institution. The pictures are classified under the headings of historical subjects (portraits, &c.); studies of natural objects, everyday scenes and out-of-door subjects; and reproductions of standard works of art. The Society has made arrangements with the publishers whereby they are enabled to sell the pictures to schools at very low rates, in some cases considerably under the market prices; for example, the three magnificent etchings depicting the historic incidents of:—"The Armada sailing from Ferrol" (Sir Oswald Brierly), "The Defeat of the Armada off Gravelines," by the same artist, and "The Armada in Sight" (Seymour Lucas); the published prices of which amount to eight guineas, may be obtained for £2 5s. 6d. on condition that the three are hung together. These pictures measure about 30″ × 20″, and may be seen to great advantage in the large hall of the Settlement. Henri Rivière's woodblock colour prints alluded to above, which are published at 10s., are offered at 8s., or four guineas for the dozen; Constable's "Valley Farm" (22″ × 19″), published at £2 2s., may be had for 11s. 4d.; Landseer's "Monarch of the Glen" (24″ × 23″), published at £1 1s., for 11s. 4d., Millais's "Princes in the Tower" (26″ × 16″) published at £2 2s., for £1 10s. 4d., and so on through the list of upwards of eight hundred works, which contains almost all the names famous in the world of art for the last four or five hundred years. The Art for Schools Association does not advertise, nor does it issue an illustrated catalogue, but the complete set of pictures may be seen at the offices, or a list of the Society's publications, with prices, may be obtained from the secretary, Miss M. L. Cooper, Passmore Edwards Settlement, Tavistock-place, London, W.C.

THE OVERBALANCED CURRICULUM.

A Plea for Individuality in Leisure Hours.[1]

By Arthur Rowntree, B.A.
Headmaster of Botham School, York.

THE distinguished president of Harvard University tells us that, whilst the debate over the proper selection of studies in youth has been a long and wearisome one, "at last two propositions are seen to command almost universal acceptance. The first is that children and young people should study the elements of a considerable variety of subjects. . . . The second is that training for power of work and service should be the prime object of education throughout life, no matter in what line the trained powers of the individual may be applied."

The few remarks that I have to make on the subject of leisure-hour work in boys' boarding schools assume those two thoughts: (1) variety of subjects is essential; (2) training for work and service is essential.

Remembering that there is no dangerous as generalisation, particul regard to such things as the delicate of mind, let us carve out the school begin with, I treat Sunday as a *d* obviously a false start—and pass to fo class work and preparation; if we eat hours, play for eighteen, and sleep fo we have spent 124 hours out of an avai of 144. May I claim the remaining leisure-hour pursuits?

If we neglect these we are forgetting thought, "training for power of wor vice"; we are stamping our *impri* wastage. And surely, if the word s meant leisure, we are not guilty of mu in asking that school shall still inclu Until these hours are satisfactorily dea balanced curriculum that we are agre is unstable; it is overbalanced, and ov largely by the weight of athleticism in and the consequent lack of ideas in I am not entering on a cheap tirade a letics; she has her own place and sco to play that nothing else can. But if bid knowledge know her place, we athletics know her place too.

One of those much praised and mu stories of schoolboy life shows that m study had a higher conception of life master who expected all his house to the matches and yell "Well hit, sir!" on one leg and grinning all the afterno it is notable that this biographer of S Co. designates Little Hartopp as the "believed in boys and knew somethi them"—the only master who understoo hour pursuits.

We want no wasted time in school dent Eliot pleads for the "habit of concentrated attention." The proble says, to discover the means of intere child "in mental occupation enough him to concentrate his attention. Ski covering the means of interesting th mind enough to compel attention is istic of the good teacher. If oral instru not gain a close attention, perhaps bo if books fail, carpenter's tools, cook's lathe, an embroidery frame, or a forge ceed; if mechanical work does not mental forces, perhaps drawing or mode if all other means fail, the training of of attention may be begun through mu

In ways of this kind the net must wide for the schoolboy. The rooms sh arranged that there is space for a lit voluntary nature study, for carpentry; hours so arranged that it is worth whil down to some of these employments. and briars obstruct the path of the loaf

The library must be good. With a and tact much can be done. I found las

[1] A paper read before the Educational Science Section of the British Association at its meeting at York, 1906.

at a large amount of voluntary reading
en done by one class. The reading
a wide area; a large number had read
oetry, including many of Shakespeare's
some Browning, some Matthew Arnold,
) had read "Paradise Lost." Two read
las," one Carlyle's "Heroes," and one
Origin of Species." Partly in connection
s reading, the Essay Society and Debating
ere meeting in alternate weeks.
ie same time the Natural History Club
s fortnightly meetings was run with
by a committee of boys advised by a
who had sympathy, tact, and knowledge,
naturalist himself. The school organisa-
kes it easy for these boys to have long
s of time in the neighbouring hunting
: plants, butterflies, shells, have their
s. Some of the school public functions
eir centre in this work; a Christmas ex-
and prize distribution are useful
ies.
speaking from the cumulative experience
nty years during which these pursuits
en followed. Some of my colleagues have
d an exhibition of leisure-hour work a
of hundred yards beyond the reception
the British Association.
collections are shown there, and our ex-
is that the physical activities involved
ctions prove how invaluable they are. I
re of the dangers of collections, and heard
k of a small boy (not connected with this
who had imbibed the thought that a col-
was a necessity, and took for his melan-
ania the collecting of beer-bottle labels!
iest records of efficient work that we can
ire found in special studies or in diaries.
has prepared a dozen cases illustrating
urs of insects; he shows the common and
udded blues on rushes, the buff tips on
ticks; and another case shows small tor-
ll chrysalids affected in colour by the
o which they are attached. Another boy
de a careful study of shells. His work
im to all the neighbouring ponds; he
is spoils home, and his note-books show
f structures with descriptions and draw-
a high order. And not the least part of
cess is the help that he has given to
boys; his has been a training for power
and service.
d boy exhibits fifteen volumes on ecclesi-
architecture, compiled in two years and
He has rubbings of brasses and careful
s; he has made a comparison of three
s of archiepiscopal vestments from re-
tive tombs.
xhibition includes books written by Old
subjects which have been their school
; also photographs of birds' nests and eggs
a couple of brothers in the scant leisure
iness gave them soon after leaving school.
ecessary environment for this work in-
sympathy and tradition, fostered by
parents, the school, and Old Boys. The Old Scholars' Association has done good service in offering an annual prize for research work.

All this work is voluntary in so far as the word can be applied where the pressure of public opinion is all on the side of the work. So that patience is fostered, acquisitiveness is fostered, industry is fostered; and these are accompanied by pleasurable emotions in part due to the interest of the work, in part to its voluntary nature—the boy is acting on his own initiative. The whole system helps to solve the problem of the "duffers," mental and moral. It is a wastage for the nation that the dull boys shall be rusticated as intellectually unfit or herded together as mental lepers. I have in mind a boy who made little headway in the schoolroom and less in the playing-field; but he became a respected member of the school through his pre-eminence as a carpenter; his skill taught self-respect, and he was universally respected.

Again, I have repeatedly seen a boy who was wasting his substance in riotous line-writing suddenly captured by a hobby, and experiencing at once true conversion of the schoolboy heart; it is a veritable return of the Prodigal Son. But it is not chiefly on behalf of a minority of weaklings, mental or moral, that I plead for full opportunities for the leisure hours. It is on behalf of the corporate life of the school, and the life of every individual in the school. I should like to see an Order of Merit instituted. Would it not be possible for some university entrance scholarships to be granted as school-leaving scholarships, so that a premium might be placed on the all-roundness engendered by leisure-hour pursuits?

They give a thought-stimulus to the school. President Eliot says, if I may quote him once more: "The problem education for efficiency has to solve is how to stimulate young people to think in the absence of the pressing motives of the real world. Since consecutive thinking absolutely requires personal initiative, or a compulsion from within and not from without, there must be a motive for this compelling action of the will. One available motive is supplied by experience of the enjoyment or satisfaction which good thinking yields to the thinker; but this motive can be roused to activity in the study of those subjects only which have a natural interest for the young thinker."

The uniformity of school life—interminable class-work, cricket and cricket jargon; or form-work, football and football slang—is deadening; this encourages the "vapid, dull, and stupid boys" who were in the newspaper columns a few months ago. The right culture of leisure hour pursuits tends to wide-awakeness, expands the circle of thought, helps to make the full mind which leaves little room for ignoble thoughts, and makes for that sturdy independence of thought combined with high endeavours which build the hopes of the future. A boy who has learned to spend his leisure hours wisely is ready to serve his day and generation.

MATRICULATION AT THE ENGLISH UNIVERSITIES.

By FRED CHARLES, B.A.
Strand School, London.

THE English universities, with slight exception, grant to the holders of various certificates exemption from all or part of their own entrance examinations, and an attempt is here made to summarise these mutual concessions.

Oxford will accept as an equivalent to the "examination in stated subjects" at Responsions a certificate of having passed Parts I. and II. of the Previous at Cambridge; and Cambridge regards Responsions as exempting from Part I. of the Previous. Both universities accept, under certain conditions, the certificates of the Oxford and Cambridge Schools Examination Board. Thus, at Oxford, if the holder has passed in Latin, Greek, and mathematics at the same examination, he is exempt from the examination in stated subjects; while Cambridge regards a pass in Latin and Greek as exempting from the classical papers, and Scripture (if including Greek Gospel) from the paper on the Greek Gospel.

The Senior University Local examinations also serve for all or part of Responsions and of the Previous. Oxford specifies that the holder of a certificate who has shown sufficient merit in the Oxford Senior Local examination is to be excused from Responsions, and grants the same concession to the holder of the Cambridge Senior Local certificates, provided: (1) that the holder has shown sufficient merit in Latin and in Greek to be qualified in these subjects for exemption from Part I. of the Previous; (2) that the certificate includes arithmetic and either algebra or geometry; (3) that the holder is certified by the Delegates of Local examinations to have shown sufficient merit in Latin prose. Cambridge grants exemption from the classical papers and the paper on the Gospel to those who have satisfied the examiners in those subjects at the Senior Local examinations of either university, provided that the Scripture included the Greek Gospel.

Both Oxford and Cambridge Universities will accept a certificate from the Principal or one of the Registrars of the University of London that the holder has passed at that university either the Matriculation or the School Examination (Matriculation standard) for the School-leaving certificate, if it includes Latin and Greek. Oxford requires further that the holder has passed in elementary mathematics, and that he has satisfied the examiners in an additional paper in Latin prose composition, or that he has satisfied the masters of the schools in Latin prose composition. Cambridge excepts from this exemption the paper in Greek Gospel or its substitute.

A certificate from the Registrar of the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, holder has passed the Matriculation ex of that Board is accepted by Oxford provided that it includes Latin, Greek, mentary mathematics, and that he fied in Latin prose composition e examiners or the masters of the sch same certificate is accepted by Cambr versity provided it includes Latin and G this university excepts the paper in Gre and also the paper in Latin unprepare tion unless that was taken as the alte the set books in Latin.

A candidate in the Leaving Certificate tion of the Scotch Education Board passed at the same examination in th Grade, both in Latin and Greek, is ex sponsions at Oxford if he has also mathematics in the lower standard, and bridge he is excused the Previous, e paper on the Greek Gospel or its subs

No mention has yet been made of e from the examination in an additional Responsions and from Part II. of the Oxford accepts:—

(1) A Higher Certificate of the Ox Cambridge Schools Examination Board, that the holder has passed in French or or with distinction in Greek or Latin;

(2) A certificate from the Scotch Educa partment that the candidate has passe Honours Grade in Greek, Latin, Fre German;

(3) A certificate stating that the ho shown sufficient merit in French, Ger Italian, in the Oxford Senior Local exam

(4) A certificate of having passed th bridge Senior Local examination, provi the holder has shown sufficient merit t titled to exemption from the additional of the Previous, Part II.

The corresponding exemptions at Ca cannot be specified so easily, the conditio much more complicated. The Higher C of the Schools Examination Board Senior and Higher Local examinati exempt from mathematics, English essa ture, and the additional subjects, provi candidate passed in those subjects. tificate of the Scotch Education Dep London Matriculation, and the Joint M tion of Manchester, Liverpool, Lee Sheffield procure exemption for their from Part II., except in Paley's "Evi and from the additional subject.

London University grants exemption f Matriculation examination to graduates ford and Cambridge; to those who hav all examinations for a degree in those sities; to women who have obtained Tri tificates granted by Cambridge, and to who have passed the Second Public Exa of Oxford; to students who hold the School-leaving Certificate, having passed and the same occasion, in the Higher or

n all the subjects required by the Matricu-
egulations; and to students who have
Parts I. and II. of the Cambridge Pre-
rovided that the two parts are taken at
e time, and provided that either logic
ı taken in Part II., or, if the candidate
n Paley's "Evidences" instead of logic,
ılso passed in one of the additional sub-

)xford Senior Local and the Cambridge
Local certificates will procure exemption
)ndon Matriculation if, at one and the
:amination, a student has passed in (1)
language and literature, including the
essay, or history together with the
essay, or geography with the English
2) arithmetic, geometry, and algebra;
three of the following subjects or com-
s of subjects not counted under (1):—
reek, French, German, Spanish, Italian,
or Roman history, English history,
history, *two* subjects in mathematics
ın those previously mentioned, chemistry,
:s, heat, sound and light, electricity and
sm, botany, zoology; provided that
atin or mechanics, or heat, sound and
chemistry, or botany, is included, and
language is included.
ligher Certificate of the Oxford and Cam-
chools Examination Board and the Senior
'ertificate of the Intermediate Education
or Ireland will give exemption under
conditions, *i.e.*, conditions which secure
subjects required by the regulations for
lon Matriculation shall have been taken.
dent is entitled to exemption from the
ation examination of the Universities of
ter, Liverpool, Leeds, and Sheffield, pro-
has satisfied any one of the five follow-
litions:—
ıs passed Responsions, including both
y and algebra, and one additional sub-

as passed Parts I. and II. of the Pre-
nd also in one of the additional subjects
examination.
las gained a Higher Certificate or certi-
)f the Oxford and Cambridge Schools
ıtion Board, including (*a*) one foreign
e; (*b*) either English or English essay,
case with English essay; (*c*) elementary
atics, together with algebra and geo-
ıs required for passing in additional
ıtics; (*d*) *two* other subjects (of which
e knowledge shall not be one), which
lude the alternative subject not taken
), and additional mathematics.
as obtained an Oxford Senior Local cer-
provided that the candidate has passed
ınd the same examination in (1) English
e and literature, including composition;
ımetic, geometry and algebra; and (3)
istory or geography, and *two* of the fol-
sections, one at least being a language,
(4) Latin, (5) Greek, (6) French, (7) German, (8) Italian, (9) Spanish, (10) one subject in higher mathematics, (11) chemistry, (12) one subject in physics.

(v) Has obtained a Cambridge Senior Local certificate, with the same provision as in (iv).

OBJECT-LESSONS.

II.[1]

By O. H. Latter, M.A.
Charterhouse.

THE problem that presents itself to everyone engaged in teaching large classes is to secure that every member of the class shall receive the mental training and stimulus aimed at in each lesson. In dealing with object-lessons it is most desirable that every child shall have exactly the same opportunities and shall be compelled by the manner in which the lesson is given to use and cultivate his own powers of observation and reasoning at each step. With this object in view, it is best that the teacher shall beforehand draw up a definite list of questions relating to the object in hand, and so framed that, step by step, the facts shall be ascertained, and then easy conclusions deduced. These questions may be written upon the blackboard a few at a time, or separate slips may be copied and handed round to each member of the class. The answers can then be written down by each pupil, the whole then discussed by the teacher, and many of the same questions repeated *viva voce*, and marks perhaps assigned for their oral work. The written results can subsequently be corrected by the teacher and returned with comments at the beginning of the following lesson. The greater proportion of marks should certainly be allotted to the written work and drawings. Great importance should be attached to the composition of the answers; children are very apt when writing an answer to a printed question to reply, as though *viva voce*, in a single word or an incomplete sentence. The teacher should insist upon every answer being a complete sentence, perfectly intelligible to anyone reading it even in ignorance of the exact form taken by the question. Failure to enforce this not only misses a great opportunity, but leads to habits of slovenly thought and still more slovenly writing.

It will often be the case that in a long series of questions directed to some one object the later depend more or less upon the correct solution of the earlier. For this reason it is desirable to break the lesson into sections, and to make sure that the "lame-ducks" of the class do not lag hopelessly in the rear or flounder in a sea of inaccurate preliminary observations. In any large class there are sure to be some who will fail to see the bearing and meaning of the plainest question, and unless such weaklings receive early help they get thoroughly discouraged, and, in-

[1] The first article appeared in the August number.

stead of gaining in self-reliance, suffer the opposite experience, and are the worse rather than the better for the lesson. In thus speaking I have in my mind those pupils of slowly-moving intellect who really are hardly fit for class teaching, but are perfectly well able to grasp all the facts and general principles, provided that individual personal attention is bestowed. An alert teacher will quickly detect these members of his class, and it should henceforth be his business to move about the class-room while the pupils are writing their answers, and to make sure, *by subsidiary questions and by no other means*, that these congenital laggards are making due headway.

Let us now proceed to repeat the lesson already sketched in the previous article, but in such a manner as to tell the pupil nothing that he ought to be able to find out by the aid of his own eyes and intelligence. It goes without saying that specimens should be provided in sufficient number to ensure that each child can personally examine one of each kind. In some cases it will be necessary to provide one example for each child; in others it may be possible to allow two or three children to share a specimen between them.

Starting, then, with a general survey of the whole series, the following questions might be asked:- -"What do you notice about the thickness and strength of the stems and branches of all these climbing plants in relation to the total size of the plant? Look, next time you are out walking, for an ivy plant which has not found anything up which to climb, and tell me next lesson about the way in which it has grown. You might also in the course of the summer try the effect of growing a scarlet-runner plant in a pot, and giving it no pole to climb. How do all non-climbing plants, even such opposites as an oak-tree and a daisy, dispose their leaves with regard to the light? What position do the leaves of geraniums and other plants grown in a window take up? Recall what we found out in a previous lesson about plants grown in darkness or in a bad light. Now say what advantage these plants obtain by their habit of climbing."

Thus much will suffice for introduction; and here a pause might be made for discussion, and to make sure that all have grasped the fact that climbing plants possess but weak and relatively slender stems, incapable without assistance of sustaining the weight of the leaves, and, further, that light is necessary for the health of green plants, and that the general disposition of the plant members is such as to secure good exposure of the leaves. The teacher may then prepare the way for the next batch of questions by stating the fact that different plants use different members for the purpose of attachment, and may tell the class that he wishes them to find out what part of the plant it is that becomes a climbing organ in each case. Some such introduction is legitimate and indeed necessary, in order to direct the attention to the salient points and to give purpose to the inquiry in hand.

Proceeding then to the ivy, "What c the things by which the ivy lays hold o port? On what part of the plant and w do they grow? Do they, with regard to bear any constant relation to the le branches? What portions of other pl we have examined were of the same these climbing organs, and behaved in way towards light? What part of the you, then, conclude that these climbin are? Try when you are out if you can similar things upon the ivy plant which to find anything up which to climb."

Here again, there should be a paus vision, and the children may be told the ivy plant that is trailing over th confirms or weakens their conclusion plant uses (aerial) roots for laying hold trees, &c. "Now consider the hop, hor scarlet-runner, and convolvulus togetl what means do these four all climb? yourself to be walking up the spiral sta scribed by the plants—towards which h or left, would you constantly keep turnin ascent of each plant? If the growing any climbing plant always grew towards and (in the northern hemisphere) foll sun in his daily path across the sky, wha spiral would be described, one turnin right hand or to the left? Is this the any of the four plants under examinatio so, in which? What conclusion do y arrive at with regard to the cause of th described by these plants? When you in the country try to find other plant climb in the same manner as these f notice which kind of spiral they describ by means of a stick pushed into the grou the exact position of the growing-poi scarlet-runner plant in the early morni the plant again several times at interv couple of hours or so during the day, a early next morning at the same time a previous day; on each occasion mark a the position of the growing-point, and t (*a*) in which direction the point moves, much (through what number of degrees) in the course of the twenty-four hour what period the movement is most ra when most slow; (*d*) if the movement same or in the opposite direction to that the sun appears to move."

It would be tedious to pursue to the whole of the lesson previously sketched. that I have said enough to show what to be the only useful way of conductin lessons, viz., by appropriate questions the pupil to find out as much as may r be expected about any given object, and home to him the consciousness that even common objects in nature contain rich interest, and that it is in his own pow lock the door of the treasure-house with that has been in his possession so long been aware of his own existence.

must not be supposed that I am main-
iat an object-lesson delivered upon the
advocated, and lasting, perhaps, one
ie longest, could by any possibility em-
hin its limits the whole or anything like
of the matter with which I dealt in my
rticle. On the contrary, at least three
ssons would be required. It may, per-
advanced in objection that the method
re very slow, and the amount of know-
ined in a given time very slight.
And to such criticism I would reply
mount learnt matters not one jot; the
f learning—that is what matters, and
nost of all at that early period of life
, as I have already said, object-lessons
ded. Such knowledge as is gained
rocess here recommended is acquired
upon authority nor by rote, but solely
sult of individual endeavour to learn
m nature herself. For each child the
piece of original research, and though
ascertained are to be found in every
yet for the child it is fresh knowledge
the same kind of way as we may hope
ter life he will gain knowledge that is
no book save the unopened pages of
At first he must be guided and taught
stions are to be put, in order that after-
may know how to formulate his own
and how to devise his own experi-
s own acts of interrogation. And, as
already insisted, we have abundant
d sanction for travelling slowly, step
over the first part of the evolutionary

perhaps, have been noticed that in
ion of the above lesson at least one
deals with matters that are necessarily
e limits of the class-room. This is done
eration, for there is no doubt a tend-
ng some children to keep school work
fairs of everyday life in separate mental
ents; and even if they fail to succeed
g games and less formal recreations
thoughts during school hours, yet they
ntly skilful in performing the reverse
By setting some one or two simple and
s connected with the lesson to be ascer-
of doors, a good deal may be done to
vn that undesirable dividing partition
chool and not-school, and to get rid of
ectual extinguisher, the word "shop."
of-door exercises do more than anything
foster the habit of truly seeing what
fore the eyes, and of learning at all
ether within the four walls of the class-
mid any of the thousand-and-one dif-
cumstances in which our pupils may
selves in after life. Nor will it be en-
of place to remind the science teachers
essons that it is the general, and not
, educational effect that must be borne
Few are destined to make any actual
knowledge obtained from a course of
object-lessons, but all are capable of being so trained in habits as to approach their work in life, be that what it may, in a scientific spirit, ready and desirous to learn, and determined to let no fact escape them. It is for this that object-lessons and more systematic courses of science have been introduced into school curricula.

SPELLING REFORM.

By John Bygott,
Luton Secondary School.

ONE could imagine being told that the Mailed Fist of Germany had said, "Let there be reformed spelling," and there *was* reformed spelling; but it is a little more difficult to take President Roosevelt's announcement seriously. In certain quarters it seems to have fallen like a bolt from the blue, but rational reflection will show us that it is neither so momentous nor so radical as some sections of the Press would have us believe.

In the first place, what is it? Merely a direction that in future Government publications of the United States three hundred selected words be spelled as set forth in the list at the foot of this article. President Roosevelt's order is embodied in a letter to the official printer, in which he says: "There is not the slightest intention to do anything revolutionary or initiate any far-reaching policy. The purpose simply is for the Government, instead of lagging behind popular sentiment, to advance abreast of it. . . . If the slight changes . . . meet with popular approval, then the changes will become permanent without any reference to what public officials or individual private citizens may feel; if they do not, they will be dropt, and that is all there is about it."

Thus, it will be seen that no new system of phonetics is proposed, no remodelling of the language, no simplified English which should outrival Esperanto, no linguistic shorthand couched in those mysterious hieroglyphics so dear to the spelling reformer of old. A glance through the list will reveal many forms familiar to those accustomed to American books and papers. For some years we have seen *u* dropped by Americans in the ending *-our*, and even ourselves sometimes write *honor, color*, &c., though we may not countenance such spelling "in school." In letter writing and private notes, who is not often tempted to pen *altho', program?* and who is there who would take exception to *z* in such words as *catechize, legalize*, or *naturalize*, though we may prefer the *s*? Many of the spellings can hardly be termed reformations; we notice *assize, coeval, deposit, era, judgment, phenomenon*, to name a few which are by no means strangers on this side of the Atlantic. Perhaps what would jar most upon the orthographic nerves of some people is the substitution of *-t* for *-ed* in verbal forms such as *kissed, wrapped*, &c.

It we take a backward glance, we recollect that Anglo-Saxon has given us the past tense ending, which was originally *-de* or *-te*, and which can be traced still further back to the Gothic *-da* or *-ta*. The ever-flowing stream of time has swept away most of our inflectional endings, and it really would seem a barbarism to sacrifice the few remaining. From the first, the *t* of the past participle was distinct from the past tense, but the loss of final *-e* in *-de* or *-te* has long rendered them indistinguishable in form. One change which ought to be welcomed by the philologically wise is *rime* for *rhyme*. Who can deny that the former is more akin to the Anglo-Saxon *rim*? and it really does seem an anomaly that so many people should adopt the spelling *rhyme*, which has arisen through a wrongly-supposed connection with the Greek ῥυθμός. The spelling *wo*, *woful* is merely taking a backward leap to the good old days of Chaucer, who, in the Knight's Tale, tells us that—

> Ful ofte a-day han thise Thebanes two
> Togidre y-met, and wroght his felawe *wo*,

and in the earlier folios of Shakespeare do we not see *dolor*?—

> But, for all this, thou shalt have as many *dolors* for thy daughters as thou canst tell in a year.—*Lear*, II., iv., 54.

So much, then, for the changes, and now a few words as to their application and extension. We are told that in the States the adherents of the Roosevelt spelling are daily increasing in numbers, and it has just been announced that more than 800 American college professors have signed an agreement to use the famous 300 words. Moreover, the Civil Service Board in Washington has decided that in examinations for Government posts the new method may be used, though the old still remains optional.

Will the new spelling be far-reaching in its effects? I question whether it will. As previously pointed out, many of the renderings have for some time prevailed in American publications, and no doubt the president's dictum will hold in the case of State documents, as well as in commercial correspondence and the more ephemeral type of journalism. From a distinctly literary standpoint we think it will be long before such changes make headway, if, indeed, they ever do. This seems particularly the case with the reissue of standard works. In a contemporary novel we may pass *plow* and *center* with scarce a shudder, but Shakespeare and Milton in a new guise—semi-phonetic, with ghost-like touches of Chaucerian forms! The thought is too uncanny; Bowdlerisms are bad enough, but Theodorites seem worse.

Before any spelling reform can make progress, there must be some agreement as to its general principles, and the only really satisfactory way to do this seems to be to appoint a commission of philologists and literary men to lay down principles and to suggest initial reforms. W Roosevelt has done is intrinsically uni but its moral effect is great: it is the fi which may lead the ninety and nine t Had the president been less decisive, ar proposed a conference of British and authorities to decide reasonable cha would have earned the gratitude, inste criticism, of two hemispheres. He has movement a great advertisement, but w whether he has really done more tha clubs, afternoon tea-tables, and oth within the meaning of the Act with a novel and exciting subject of conversat picture is not without a humorous lawyers have discovered that the orde a law of Congress, passed twenty-f ago, making Webster's Dictionary standard of Government spelling in t States. Perhaps spelling-books were s competitive examinations less strict th

Agreed, then, that a guarded spelli would be useful and in some cases ad is obvious that it cannot be brought one man, and that, if done, it must b scientific lines. That is to say, due re be paid to the history and constructi language in general and of words in and nothing done which shall rob our s our literature of those romantic touch toric interest which appeal so strongl student of English.

I am asked whether teaching of refor ing is desirable or possible in schools, answer (my own opinion, mind you), think not, from the standpoint of real ed And why? Merely because I hold that crete teaching is always superior to theories, the best and truest way of English is to bring your learner into contact with all that is noblest in the of his mother tongue. Could this be su done, if the sleuth-hound of reformec were let loose upon our great poets, of the novel and the essay? To my answer is obvious, and it is not an affirm

Like Pilate, President Roosevelt ha but, for all that, I am afraid the majo will continue to spell words as they a in our great classics, as they are se our dictionaries. The famous "three is only a momentary wonder, and, d appearance, the stars will continue to they shone upon Chaucer and Shakes sun will still rise in the east and set in and the forces of Nature will remain The president can scarcely use the wo Ovid to describe himself and his list—

> Nos duo turba sumus.

We give below the three hundred v spelling of which President Roosevelt h stands in need of amendment. The pr of spelling the words is given side by the new.

Form	Present Form.
nt	abridgement
	accoutre
	accursed
dgment	acknowledgement
	addressed
	adze
	affixed
	although
	anapaest
	anaemia
a	anaesthesia
c	anaesthetic
	antipyrine
	antitoxine
	apothegm
	apprise
	arbour
y	archaeology
	ardour
	armour
	artisan
	assise
	axe
	banns
	barque
	behaviour
	blessed
	blushed
	brasen
	brasier
	bunn
	burr
	calibre
	calliper
	candour
	caressed
	catalogue
	catechise
	centre
	chapped
	cheque
	chequer
	chimaera
	civilise
	clamour
	clangour
	clapped
	clasped
	clipped
	clew
	coaeval
	colour
	coulter
	commixed
	compressed
	comprise
	confessed
	comptroller
	coquette
	criticise
	cropped
	crossed
	crushed
	queue
	cursed
	cutlass
a	cyclopaedia
	dactyle
	dashed
	decalogue
	defence
	demagogue
	demeanour
	deposite
	depressed
	develope
	diaeresis
	dyke
	dipped
	discussed
	despatch
	distill
	distressed
	dolour
	domicile
	draught
	drachm
	dressed
	dripped
	drooped
	dropped
	dulness
al	oecumenical
	aedile
	aegis
	enamour
dia	encyclopaedia
	endeavour
	envelope
	Aeolian
	aeon
	epaulette
	eponyme

New Form.	Present Form.
era	aera
esophagus	oesophagus
esthetic	aesthetic
esthetics	aesthetics
estivate	aestivate
ether	aether
etiology	aetiology
exorcize	exorcise
exprest	expressed
fagot	faggot
fantasm	phantasm
fantasy	phantasy
fantom	phantom
favor	favour
favorite	favourite
fervor	fervour
fiber	fibre
fixt	fixed
flavor	flavour
fulfil	fulfill
fulness	fullness
gage	gauge
gazel	gazelle
gelatin	gelatine
gild	guild
gipsy	gypsy
gloze	glose
glycerin	glycerine
good-by	good-bye
gram	gramme
gript	gripped
harbor	harbour
harken	hearken
heapt	heaped
hematin	haematin
hiccup	hiccough
hock	hough
homeopathy	homoeopathy
homonym	homonyme
honor	honour
humor	humour
husht	hushed
hypotenuse	hypothenuse
idolize	idolise
imprest	impressed
instil	instill
jail	gaol
judgment	judgement
kist	kissed
labor	labour
lacrimal	lachrymal
lapt	lapped
lasht	lashed
leapt	leaped
legalize	legalise
license	licence
licorice	liquorice
liter	litre
lodgment	lodgement
lookt	looked
lopt	lopped
luster	lustre
mama	mamma
maneuver	manœuvre
materialize	materialise
meager	meagre
medieval	mediaeval
meter	metre
mist	missed
miter	mitre
mixt	mixed
mold	mould
molder	moulder
molding	moulding
moldy	mouldy
molt	moult
mullen	mullein
naturalize	naturalise
neighbor	neighbour
niter	nitre
nipt	nipped
ocher	ochre
odor	odour
offense	offence
omelet	omelette
opprest	oppressed
orthopedic	orthopaedic
paleography	palaeography
paleolithic	palaeolithic
paleontology	palaeontology
paleozoic	palaeozoic
parafin	paraffin
parlor	parlour
partizan	partisan
past	passed
patronize	patronise
pedagog	pedagogue
pedobaptist	paedobaptist
phenix	phœnix
phenomenon	phaenomenon
pigmy	pygmy
plow	plough
polyp	polype

New Form.	Present Form.
possest	possessed
practise	practice
prefixt	prefixed
prenomen	praenomen
prest	pressed
pretense	pretence
preterit	preterite
pretermit	praetermit
primeval	primaeval
profest	professed
program	programme
prolog	prologue
propt	propped
pur	purr
quartet	quartette
questor	quaestor
quintet	quintette
rancor	rancour
rapt	rapped
raze	rase
recognize	recognise
reconnoiter	reconnoitre
rigor	rigour
rime	rhyme
ript	ripped
rumor	rumour
saber	sabre
saltpeter	saltpetre
savior	saviour
savor	savour
scepter	sceptre
septet	septette
sepulcher	sepulchre
sextet	sextette
silvan	sylvan
simitar	cimeter, scimitar,
sipt	sipped [&c.
skilful	skillful
sithe	scythe
skipt	skipped
slipt	slipped
smolder	smoulder
snapt	snapped
somber	sombre
specter	spectre
splendor	splendour
stedfast	steadfast

New Form.	Present Form.
stept	stepped
stopt	stopped
strest	stressed
stript	stripped
subpena	subpœna
succor	succour
suffixt	suffixed
sulfate	sulphate
sulfur	sulphur
sumac	sumach
suppresst	suppressed
surprize	surprise
synonym	synonyme
tabor	tabour
tapt	tapped
teazel	teasel
tenor	tenour
theater	theatre
tho	though
thoro	thorough
thoroly	thoroughly
thru	through
thruout	throughout
tipt	tipped
topt	topped
tost	tossed
transgrest	transgressed
trapt	trapped
tript	tripped
tumor	tumour
valor	valour
vapor	vapour
vext	vexed
vigor	vigour
vizor	visor
wagon	waggon
washt	washed
whipt	whipped
whisky	whiskey
wilful	wilful
winkt	winked
wisht	wished
wo	woe
woful	woeful
woolen	woollen
wrapt	wrapped

PHYSICAL TRAINING IN SWEDEN.

By Aline Rothera,
Queen Margaret's School, Scarborough.

ADVOCATES of physical training and teachers of gymnastics in England have long been trying to formulate a system at once the best for physical development and the most suitable for use in our schools.

The stress of modern civilisation has brought in its train several ill effects, and people have begun to realise that steps must be taken to cope with the mental wear and tear of present-day life. This feeling, widespread as it is, has perhaps been most strongly marked in girls' schools, where increased mental work and altered physical conditions have shown most clearly the need for better equipped bodies with which to withstand the strain thus produced, and it has been thought that gymnastics, together with better hygienic conditions of living, may be of great value to this end. While it is recognised that a specially devised scheme of physical training must accompany the thorough and systematised intellectual course provided for children, both boys and girls, during their school life, no one system holds complete sway in England, and the difficulty is to decide which among them is best and most suitable to supply the needs of modern civilisation.

Being an enthusiastic advocate of the Swedish system, and having for many years had practical experience of its beneficial results, first as a student, then as a teacher, I determined in

the spring of this year to see how it was carried on in its mother country; accordingly I visited Sweden and Denmark, where, by the kindness of Prof. Töngren, headmaster of the Central Institute, Stockholm, and Inspector Knudsen, Gymnastik direcktoren, Copenhagen, I was enabled to inspect thoroughly while at work several schools of varying type. Among these were the Norra Latin Läroverket, a large secondary school of 750 boys; the Athenaum, a similar one for girls; the Katarina Skola, a large primary school; and also the work done by the men and women students in the Central Institute for the training of gymnastic teachers. The Central Institute is the source of the gymnastic life of Sweden, and from it flows, year by year, a steady supply of trained teachers. Consequently the whole country is brought up on one system — a system of gradualgrowth, based on sound physiological and psychological reasons, so thoroughly and systematically thought out that for supplying the bodily needs of individuals and communities it appears to stand alone and to have no equal.

FIG. 1.—A Class of School Children in a Swedish Gymnasium: showing the Children teaching each other.

The first thing that strikes the visitor on starting such a tour of inspection in Stockholm is the extraordinarily beautiful gymnasia provided by the State for the schools. Each gymnasium is, as a rule, a large, airy room placed in a prominent position in the school, and possessing, for the most part, a roomy balcony, from which point of vantage the visitor is enabled to watch the work done by the various classes. On entering the gymnasium of the Norra Latin Läroverket a large open floor space is seen, four mid-corner pillars, broad and massive, each having its base padded with leather, and surmounted by a "crow's nest," reached by a vertical ladder. Round the walls are seen rows of "ribstalls," while, fastened to pulleys, either at the walls or on the ceiling, are rope ladders, vertical ladders, and ropes of various kinds. At the far end is a horizontal ladder, and behind that a series of vertical poles, "well fitted up at any rate"!

But this is not all. In the middle of I was watching, a class of 175 well-set-u lads, suddenly a command came from the t Major Selöw, and, as if by magic, ap hitherto hidden from sight appeared ir Trap-doors opened in the floor, and " booms," uprights and all (eight sets), spra being; "saddles" appeared and were fi to the booms; parallel bars (four sets), as jumped up from hidden regions; four ropes descended from the crows' nests, a made fast to a central hook which had ously appeared on the ground; ropes down and hung dangling from the ceiling; ing boards, brought from hidden recesses wall, were fixed to the ribstalls; while horses of various shapes were wheeled, j stands were carried, from far-off corn placed for use paratus began. a w sight, liable t away th of a cas initiated server!

This typical nasium Stockhol turally are slig ferences able in of d schools, as varyi floor sp arrangem apparatu the sa points same — dant apparatus, carefully arranged so as interfere with the floor space, easy of and capable of being moved quickl quietly by the children themselves. I several during my stay in the northern and each time the wonder of them me afresh. The Katarina Skola, a p school, in which are found the children of Stockholm, possesses one largest; Frou Almquist's Samskola, a private co-education school, has one of th fitted; the Valhalla Vägen School, a lar secondary school, contains two, each bea furnished.

These gymnasia are in constant us only for their own purpose, or for games. Sometimes the lines of a bad court are painted in white on the floo for the most part the games played in

all, or running, or song games, which egular part of the ordinary gymnastic

equency of these lessons varies in dif- ools. In most of the secondary schools d (boys and girls being treated alike) lessons a week, varying from three- of an hour to an hour in length. In ry schools the number is fewer, in some ng three a week, in others only two. y the minimum allowed by the State is ns a week.

mber of children in each class varies bly, but usually the average is between sixty, though occasionally this number ceeded. For instance, in the Norra overket the junior class contained 100 hat of the middle school 175. And

Fig. 2.—Women Students at the Central Institute, Stockholm.

to report fully on the progress of each child under her care at the end of every term.

The arrangement in the boys' schools is somewhat different, though the plan is the same, for here the chief is assisted by "monitors"—boys who have given practical proof of their ability in the art of gymnastics, and receive special instruction every week from the head teacher himself as to the work in their individual departments during the ensuing lessons. In this way the whole school works under an organised system, and the progress of each child is noted. After infinite trouble and much searching I at last unearthed one school in the whole of Stockholm where some of the gymnastic classes were taken by the ordinary teachers. They indeed did it fairly well, but then in all probability from their childhood upwards they had been used to four lessons a week of three-quarters of an hour each.

The method of handling a class is as follows: — The children all troop in, line up, number off, and open ranks; then comes a period, usually about one-third of the whole lesson, occasionally less, during which free standing movements are executed, the whole class working in unison. Then a command is given, and immediately the class is broken up into numerous small sections, each consisting of six to eight or even ten, under the guidance of a "monitor" or sub-teacher. These small classes set to work in the briskest manner, though with no noise or confusion, at their apportioned piece of apparatus, practising for the most part exercises specially adapted for the strengthening of arms and shoulders, or for increasing the flexibility of the spine.

After a short interval has elapsed a whistle is sounded, absolute stillness ensues, a command is given, and once more the whole class assembles in union for more free standing exercises, marching, and running. Then comes the crowning point. Joy and anticipation are depicted on the children's bright faces, for well they know they have come to the part of the lesson set aside for "Running, Leaping, Jumping." Amid a breathless pause comes the order, "Out with the ap-

e ob- ay be t with ar g e divid- ention neces- duced mum, condi- work that vidual aken. nearly ool in n the t the the de- is a rained o has mnas- prac- theor- study In of the boys' schools, this head s always a whilom student of the nstitute, an ex-member of the Swedish nd, in several cases in Stockholm a present-day instructor in the where aforetime he was a pupil. girls' schools, also, the head teacher ined specialist, again usually con- some capacity as instructor with the stitute, and thoroughly acquainted with y needs and developments. In their e head teachers are supported by sub- In the case of the girls' schools these are women students at the Cental In- r secondary teachers undergoing a urse of gymnastic instruction in one of g "seminaries." To each assistant is nall class of children, which she teaches supervision of her chief, and she has

paratus and divide for work." And then such a scene ensues as is not easily forgotten. Off rush the little contingents to their various posts, out comes the apparatus, and in the space of a few brief moments everything is ready and all have set to work. Children running, leaping, jumping; vaulting over horses, saddles, bars; racing up storming boards, laughing, shrieking for very joy. One would have thought that here indeed was "Bedlam let loose." A cursory view of this busy scene suggests pandemonium itself, but in reality it is a perfectly organised whole. The children in each little class were so placed that they were allotted work suitable to their varying degrees of power; a beginner was placed with other beginners; more advanced with more advanced; and so on up the ascending scale of proficiency, so that *the work of the class was arranged accordingly.*

At home one of the greatest difficulties that a gymnastic teacher has to contend with is this very one—the difficulty of procuring classes sufficiently homogeneous to be graded; in fact, to grade the class according to their physical, and not according to their mental abilities. But, to continue. After a space of about ten minutes (perhaps rather more) the class is whistled into quietness, the apparatus is put away, and the children once more assemble in ranks. Usually a short spell of marching ensues, followed by slow, even, respiratory movements. Then comes the final lining-up; then dismissal; and the children troop out, merry, wide-awake, alert, and looking as if they had spent a most enjoyable hour of activity.

These hours of active work produce a marked effect. For, as a whole, the children, no matter what their age, are very sturdy, self-reliant, fearless little people. True, sundry crooked ones are seen amongst them, sundry high-shouldered, narrow-chested individuals, but, taking them all round, they are well developed and strong. Their gymnastic work breeds in them a courage which must stand them in good stead all their life, and their constant use of apparatus renders them strong and accustomed to feats of endurance and pluck. This produces in them a power for concentrated effort and an indifference to the "difficulties" of hard work, and, consequently, helps in the most practical way possible to prepare them for the sterner aspects of life which must inevitably ensue when school-days are over. The work in the gymnasia of Stockholm is indeed well worth seeing, and contains for the visitor many valuable lessons, some few disappointments, and much pleasure and interest. It brings home the fact that, though moving in the right direction here in England, there yet remains much to be done among our schools and colleges before it can be said that their method and practice of physical training are perfection. Better conditions are necessary, for it is by looking after and ensuring their health that our children are rendered capable of profiting by the vast stores of knowledge brought to bear upon them school career. We need:—

1. Larger and better gymnasia, equipp suitable apparatus; a greater freque lessons; a more rational method of clot the children, especially girls. For in t the gymnastic work could advance enor and the "dulness of gymnastics" a "monotony of the movements" would Although the use of so much apparatus ally in the case of girls, is fraught with inherent dangers, and dangers against w cannot guard too carefully, and unless the is very alert there is great risk of sa "good shape" and steady persevering for undue variety and change, yet the tages outweigh the disadvantages; an apparatus work can be obtained with a portion of free standing movements, an share of æsthetic graceful motions, an id bination is produced, and one which in run must of necessity ensure the most h results.

2. The appointment of fully qualified, trained teachers for the posts of heads gymnastic department in all our schools

3. A more careful and thorough sy medical inspection of the children i schools.

4. A codification of a universal scheme t out our whole educational system. F these conditions the work could advance b and bounds, and the nation as a whole wo the result. We should then be able to the ideal we are endeavouring to set up improvement of our children's health and well-being, and for the building up of thei mental, and intellectual character.

SUPERANNUATION IN SCOTLA

THE expiry in April this year of septennial period of the Ele Teachers' Superannuation Act nec by the terms of the Act a review of it tions and readjustment of its financial pr in the light of the mortality returns dur period. The National Union of Teach the Educational Institute of Scotland ha engaged for some time on an investigat the working of the Act so far as their c stituents are concerned. The Educatio stitute of Scotland has placed the result inquiries before the public in a pamphlet "The Teachers' Superannuation Act.—A ment as to its Operations and a Plea Amendment." From this document it that the average pension paid to 118 teac men and 27 women) was £32 10*s.* 8*d.* age of sixty-five years. Against this is the fact that the average pension paid to men in the leading Scottish municipali £63 4*s.* 6*d.* at the age of fifty-five. Me is the average, the range of pensions pai

is even more pitiful. These vary from s. to £45 16s. 8d. for men, and from . to £36 0s. 2d. for women. Facts such show a shameful conception of the value ers' services, and are, as the Report little short of a national disgrace." A al has been heard of late on public plat- f the honour, dignity, and nobility of the profession, but recognition of these will ed for in vain in these starvation allow- aid to public servants who have been de- of their means of livelihood avowedly in erests of the State. Secondary-school have from time to time put forth a plea uperannuation scheme of their own, but better no pension scheme than the miser- tances allowed to the elementary teachers Act.

seem to be current in official circles two opposed ideas in regard to superannua- One, enunciated recently by a Commission Service pensions, holds that superannua- owances should be on such a scale as to n the individuals affected in the social they had reached by their previous good This definition of superannuation is the epted and acted upon by all departments Civil Service and by all public corporations sociations that have established pension . The departmental committee, however, hose report the Teachers' Superannuation based, took the view that superannuation eleemosynary allowance to secure individ- om want. As this view was allowed to it follows that the allowances granted relation to salary, and do not in the case older teachers at least reach even the d of a living wage. So long as this is d as the principle of superannuation, ry-school teachers may be trusted to have to do with it. Yet their claims to share t and equitable pension scheme have been usly strengthened by the passing of the 1902, and should be kept steadily to the

old hard-and-fast line between elementary condary education has in large measure ared. At the passing of the Education 1870, elementary education, as being the on of the masses, was regarded as pecu- he concern of the State, while secondary on was looked upon as the privilege of ses with which the State had no business. point of view has gradually emerged, and xpression in the Act of 1902. It is that e business of the State to keep open all nues of intellectual opportunity from the to the top of the educational system, and e *la carrière ouverte aux talents* of even st lowly born. Indeed, as Mr. Chamber- s said, it may be questioned whether the us sums spent on elementary education ny notable direct return. There is a return valuable kind in the general happiness and n of the nation, but the money spent on secondary education, he holds, brings a direct commercial return by the production and development of those individuals who would be the captains and masters of industry of the future. However this may be, the place and function of secondary education in the national life are now assured, and the concrete embodiment of this is seen in the grants, both local and imperial, that now come to secondary schools. If secondary schools are to receive State subvention and State supervision, secondary-school teachers cannot much longer be excluded from the privileges and rights that pertain to public servants, and of which a reasonable pension scheme is one of the most highly valued and prized.

In France, Germany, Austria, and among Continental nations generally, secondary-school teachers have enjoyed some form of pension scheme for over half a century. The position of secondary-school teachers is as much sought after there as that of civil servants in our own country, and for precisely the same reasons, viz., that it gives security of tenure, a recognised social status, a fair salary, and a reasonable pension scheme. In these countries the growth of the pension scheme has been gradual and instructive. Originally the pension was little more than an annuity purchased by the teachers' own contributions, which were invested on favourable terms by the State. Then State and communal authorities came forward and increased these contributions by annual grants. During the past twenty years the appreciation of the services of secondary-school teachers has increased to such an extent that in a large number of cases contributions from the teachers have ceased altogether, and the State and communities now bear the entire burden. Secondary-school teachers in this country can hardly expect such tangible appreciation of their services, but with the example of other countries before them they should be encouraged to press for the recognition of their just claims for a reasonable pension scheme. The incidence of the burden could fairly be divided among three contributors, the State, the local authority, and teachers themselves. So many municipal authorities have already in operation pension schemes for municipal officials that the addition of secondary-school teachers to the number may fairly be regarded as within the bounds of practical politics.

Easy Latin Prose. By W. H. Spragge. xviii. + 120 pp. (Arnold.) 1s. 6d.—This book contains 102 extracts for retranslation, translated from Latin authors into simple English, the Latin for some of the words being given at the foot of the page. Opinions will differ whether such extracts are better than pieces of original English a little simplified or Latinised; we prefer the latter, but those who do not will find this a useful little book. The range of subjects is wide, and many of the pieces are interesting anecdotes. A short introduction deals with the complex sentence, and the arrangement of subordinate clauses. We do not like Mr. Spragge's English very much.

OXFORD LOCAL EXAMINATIONS, 1905.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

PRELIMINARY.—The examiners in *higher arithmetic* report that the terminology of the metric system should be more generally known. Carelessness as to the decimal point in all questions involving decimal methods is very common.

Attention is drawn by the examiner in *English history* (1066–1399) to the following weak points:—

(1) Much learning of text-books or analyses by heart, resulting in knowledge imperfectly assimilated and unintelligently reproduced.

(2) Inaccuracy in dates, due to the attention being fixed on the last two figures, and neglect of the first two.

(3) Vagueness in geography; the atlas is an essential adjunct to a history lesson.

(4) Wordy answering; either excess in trivial detail, *e.g.*, the story of the White Ship, or from a notion that marks can be gained by mere verbosity.

Commenting on the papers dealing with the period 1399–1603, the examiner remarks:—"It is much to be desired that more attention should be paid to geography. On the whole, that is the weakest side of the papers, many candidates writing as if they had never seen, *e.g.*, Calais on a map, and being, therefore, quite reckless as to its position in France."

In the answers to the *English grammar* paper there was considerable vagueness as to the parsing of the relative and the indirect object. The meaning of an abstract noun was also not well grasped.

The weak spot in the answers on the book of *Scott* was usually the paraphrasing, in which both composition and punctuation left much to be desired; in some cases the selected passage was simply re-written with slight alterations in the order of the words; at other times the paraphrase consisted of clauses which had neither grammatical nor logical coherence.

The prepared *Latin* translation was not well done in many cases. Apparently an effort had been made in many centres to prepare "likely" passages; one passage was often translated as if by heart, while the rendering of the other passages was totally unlike the original. The unprepared sentences of common words in common constructions were, on the whole, poorly done.

The chief fault in the *French* papers was inaccuracy in translation. Many candidates indulged in fantastic guess-work, and it is worthy of notice that this occurred quite as much in the prepared work as in the "unseen." If anything, the prepared work was worse. The grammar was fairly satisfactory, but the irregular verbs were seldom mastered, and the reflexive conjugation was a dead letter to all but a very few candidates. In most cases the question was not *even* attempted. The parsing was poor throughout. The numbers and names of the r were generally known, but were spelt in th fanciful manner. It was evident that m the candidates had been taught by mear *phonetic script*, and that it had had a detr effect on their spelling. Such spellings for *août*, *canze* for *quinze*, *vin* for *vin* even *disweet* for *dix-huit*—which occurr regrettable frequency—were obviously du cause. In the same way, *peut* was confus *peu*, and parsed as an adverb of manne

The algebraical exercises in the *ele mathematics* papers, being of about th average in point of ability, show very the great difference between method an working. The methods used are gener cellent, and indicate good teaching; working is very often marred by ina The figures in geometry were as a r drawn, though often very faintly. The w for the most part neatly done. There frequent tendency to assume that which be proved.

JUNIOR.—The examiner in *arithmetic* that numerous answers, involving such st as "the lining of a small box with cheap costs hundreds of pounds," and "the int £1,500 for three years at 3½ per cent. to millions of pounds," show the nece the teacher's insisting on the invariable co tion of an answer as to its reasonablenes question on the metric system gave no pr this part of the syllabus had received th tion it deserves. The meaning and o "approximation" were not generally appr The problems seemed to indicate that cient thought was given to the question commencing work.

A large number of candidates who *ancient history* wrote general accounts events, about which questions were aske out arranging their facts in the proper sequence, and without being able to names of persons and places, which quired. The geography, in many cases have been studied more carefully.

The weak points in *English history* (18 are:—

(1) A tendency to go into too great some questions where width and variety are rather sought for.

(2) Sometimes the exact question is quately appreciated, and too much narr given, or results are added when caus are asked, or the like.

(3) There is often a failure to disc between the more and the less important for instance, in a description of the car statesman, the trivial matters are given prominence as the more weighty.

In *composition*, the greater number of didates appear to have found considerab culty in doing the paraphrase. Many ev the important points, though a certain did it creditably.

chief points for mention in the answers *geography* paper are:—

some cases the candidates appear to have ed to answer a question before they had its point.

he maps, on the whole, were the part of er which was done the best; but perhaps d be desirable to say that accuracy in of towns is absolutely essential.

he questions which asked for precise facts tter done than the more general questions required a comparison between countries ccount of physical phenomena.

he whole, the work of the candidates on graphy of the British Isles has been of rade character, in many cases very great ce being displayed. The most striking about the answers is their irrelevance. swers are, in many cases, too long and ve, and show an incapacity to compre- he meaning of the questions.

entences both from and into *French* were ed with a considerable amount of success ry large number of candidates. In accid- ere is room for much improvement. Can- are inclined occasionally to *paraphrase* han *translate*. There has been shown also out a considerable ignorance of the exact f words, and carelessness in the use of nd numbers. Ignorance of genders and was very conspicuous.

frequency with which the denominators tirely disregarded in the simplification of *ical* fractions seemed to denote more than ness. In the solution, again, of a simple al equation, a very large number of candi- ssumed that the root must be positive, and stage or another in their solution dropped *nus* sign. In the graphical solution of neous equations, the scale should be so d that at least some of the points marked be intersections of ruled lines. Also, h two points are theoretically sufficient to ne a straight line, it is advisable, for the accuracy, to find a larger number. The nd axes should always be clearly marked, is well that the usual convention with to the direction of the axes should be l to. The theory of indices was very known, the elementary laws being con- gain and again.

standard of the work in *geometry* seems h a higher and more uniform level than nt years, and there is evidence that the ies connected with the newer methods of rical teaching are being successfully over- There still exists, however, considerable n as to what constitutes a logical sequence oning. The diagrams are well done, but e as a check on results otherwise obtained ely understood. It would be as well if ttention were paid to this point. Common re: too small diagrams, taking "the base altitude" as the area of a triangle, and to define clearly objects which are evid- ently familiar. There is a tendency to define an isosceles triangle by the equality of its angles instead of its sides.

In *elementary experimental science*, answers to stock questions were ready, and were produced, often without the least reference to the question set; *e.g.*, a long description of the chemistry of hard water did duty for the difference between lime and chalk; Boyle's law and its proof for the law of Charles. The well-known difference of properties between a mechanical mixture and a chemical compound were not applied to the particular example set, showing how much had been left to mere memory, and how little had been done to quicken intelligence, or to grasp the bearing of one part of the subject upon another. Many candidates disregarded the directions given for performing the set experiments. On the other hand, when an experiment is required to be carried out by the candidates in their own way, a full account of the procedure should be given; a large number of candidates gave only very meagre details.

Very few candidates taking *theoretical chemistry* were able to describe any physical changes resulting on the explosion of a mixture of carbon monoxide and oxygen, and they were hazy about the volume of oxygen taking part in such a reaction. The calculations were done correctly as a rule, but in the answer to one question many candidates came to grief from their ignorance of the chemical formula of calcium hydrate.

The paper in *practical chemistry* consisted of two portions, (i) an easy piece of analysis with a very simple observation problem as a sort of "rider" to it, and (ii) a more difficult problem in observation. As to the former, the *analysis* was, generally speaking, satisfactorily done, and a large proportion of the work was excellent. The second question, in observation, revealed a serious weakness. Practically every one of the candidates had already carried out, and more or less described, the operation suggested, and most had done it twice in the course of their analysis. Yet less than five per cent. of them showed any power at all of describing it when they met it by itself. The *observation problem* proper proved too much for most of the candidates, not because it was hard, but because they did not carry out the instructions given. The few who did carry out the instructions did the problem very well.

SENIOR.—The style in which the *arithmetic* work was sent up was in many cases good, in others very poor, masses of figures being put down without explanation or any mention of the units involved. This was true not only of individuals, but also of centres, the inference being that in many schools the need for clear definition and neat work is not thoroughly grasped. Numbers of the candidates wasted much time by using very cumbrous methods. Weights and measures in the metric system proved stumbling-blocks to many, whilst the change from that to the British system or *vice versa* caused great confusion. Approximation in decimals was some-

times well done, but the larger number of the candidates used contracted methods in a thoughtless way, either rejecting too many figures and so obtaining inaccurate results, or going to the other extreme.

The most common fault in *English history* (1066–1399) is failure to answer concisely and to the point. Many candidates would improve their answers considerably by writing with more deliberation, and by paying more attention to form and style. Often candidates appear burdened with their knowledge, and unable to discriminate what is really pertinent and important. As a result they write *far too much,* and spoil their answers by introducing a mass of irrelevant detail. The answers to the general questions were few and rarely satisfactory. The better candidates avoided them too much, for when they attempted them they generally obtained good marks.

Candidates still require to be taught to think out a question, and to try to grasp its exact meaning before they write their answers; for instance, when asked for the *reasons* for a policy they are too apt to rush into a long narrative of its *results.* More attention, too, should be paid to military history: the military question was generally attempted, but often with very poor results. Where a plan of the battle was made it was usually bad; generally, however, there was no attempt at an illustration.

Of the two parts into which the *English composition* paper was divided, the first, viz., the paraphrasing of Wordsworth's sonnet, proved too hard for the vast majority of the candidates. Most of them grasped the general idea without understanding the significance of the individual phrases. Some, however, missed the sense of the sonnet altogether. Others, too, appear to have no idea of what is meant by a paraphrase. Only a very small proportion rendered it with anything approaching exactitude.

The most obvious fault in the answers on *Shakespeare's "Henry V."* is a tendency to irrelevance, partly due to the fact that candidates have crammed up lists of facts which they found it necessary to insert somewhere, whether the question invited such a recital or not. Thus, for example, a considerable proportion of candidates inserted in the question on the sources of the play a list of anachronisms, on the ground that these represented deviations from Holinshed.

Referring to the answers to *Shakespeare's "Tempest,"* the examiner says: "Of independent thinking there is deplorably little, and the little there is often lacks coherence. Self-contradiction is very frequent. The questions bearing on the literary history of the play were rarely attempted and more rarely answered with anything like success."

The most marked feature of the *geography* answers was the irrelevance of a very large proportion of them. On two points information was noticeably deficient. The distribution of rain in both Europe and Australia was discussed by a very large number of candidates, but the season of its fall was hardly alluded to. Railway were asked for in two questions, but in s a single instance was one given with ac

The answers to the questions on the Isles were almost invariably the worst. candidates displayed large acquaintanc minute details, but few seemed to underst real essentials in the topography of Britai sense of perspective, of a correct mental of the main outlines of relief and of direct distance, which showed itself frequently answers to questions on Asia, was almost absent; few candidates gave really good to the question on the Pennines, and th not a single satisfactory answer to that London Basin. For example, many ca understood quite clearly the general rel the Great Siberian Railway to the main features of the country traversed; pre they knew nothing about the names or wayside stations. But in the case of the and North-Western Railway a correct stations was often given for a long wa London by candidates who showed littl knowledge of the route followed by the

The easier *Latin prose* was, as a rule done, and it is quite clear that candidate have more practice in doing such proses dictionaries and grammars. The old sy learning grammar rules and exceptions parently been abandoned, owing to new of learning languages. But the result what disastrous, and the great majority exercises were disfigured by such mist *senatus* feminine, *pars* masculine, *cibus corpus* masculine, and so on. There wa deal of confusion between oratio obli recta: "dixit *me* recipere," "dixit id inter senatum et *vos.*" The harder pr done very fairly; more attention should to the "unity of the subject" in the Lati and the use of gerunds and gerundives.

The easier unseen was not well done number of candidates are content to the sense; otherwise it is hard to underst both *signum* and *signiferum* should be t in the same piece as "standard." The made about genders in the prose will appl to the unseen, for a knowledge of gende have saved the common mistake, " *tantum* . . . movebat," "nor did s force." The harder unseen was very w by some—though even the better candida inclined to "embroider on" the Latin t ducing fresh ideas and phrases. Many t less mistakes were make by others—ov translating *tutores* as "safer," and al many *nacti* as "born." The gerundial not understood, and *ut vigilandum sit iis* quently translated by "one must keep on those."

More proficiency was shown in answe questions on *French grammar* than in a the knowledge of elementary rules to the p for translation. This was especially ma

ndering of English into French, which failed ıch a fair standard of correctness. Simple ructions were violated, and accents very ally neglected or misplaced. The transla- rom French into English met with more ss.

elementary questions in *algebra* were gener- ell done, though there were many careless ıetical errors. The solution of quadratic ons by means of a formula should not be raged; it was wrongly quoted or applied arly fifty per cent. of the cases where it sed. The general inability to solve simul- ıs equations where, instead of the conven- x and y, their reciprocals are used, was kable. Few were able to give a clear state- by examples of the difference between per- ions and combinations, and in general the ots to deal with a problem on combinations absurd. Candidates should be taught that questions are entirely questions of common and not of formulæ. It may also be re- d that all through there seemed to be too use of formulæ rather than of the applica- f first principles.

most unsatisfactory work in *geometry* was n the drawing of the necessary figures. A on which required the bisection of the ıl angle and the bisection of the base of a le scarcely ever produced a figure even ap- ıing to correctness, although many candi- who failed in drawing the figure sent up herwise faultless proof. Few candidates, rew a figure to elucidate their definition of ent to a circle, and many of the best can- s appeared to think that neatness and ac- of drawing were matters of no import-

POLITICAL HISTORY OF ENGLAND, 1760–1837.[1]

IE reign of George III. and his two sons is the period of Tory rule in England. It is true that the first ten years are those ıggle to establish that rule, and that the ve are years of Whig triumph. But, with exceptions—and they are partial for the eriod—the seventy years covered by these es are the period during which the King governed, as well as reigned, in a sense had not been true during the reigns first two Georges. It is a period of great . It begins with the triumphant close of ven Years' War; it includes the revolt of merican colonies, the wars of the French ıtion and of Napoleon, the era of "reac- in constitutional matters, which was the of those wars, and of the more liberal which gave us a large measure of free the removal of disabilities from Protestant and Catholic dissenters, and the revolution which is known among us as the passing of *the* Reform Bill. And besides these Ireland is a growing problem. Total repression of Irish and Roman Catholics gave way to measures of attempted conciliation, measures which paved the way to the problems of our own day.

All these and many more matters are treated in a masterly way by the authors of these volumes. As far as possible, chronological order is observed, and the consequence is sometimes a violent change of subject from one paragraph to another. But the method has its advantages, especially in a period when international and constitutional questions were constantly reacting one on the other, and the reader will find these volumes, like the others of the same work, which we have previously reviewed, a storehouse of information, in which are embodied the results of the latest research. Each volume is provided, of course, with an index, and besides there are very full bibliographies.

In 1760 there were, properly speaking, neither Whigs nor Tories. The controversy between loyalty to a dynasty and loyalty to a religion which had introduced these parties into English politics had been buried on the field of Culloden. Instead, there were "connexions." And it was against these "connexions" that George III. raised the standard of a "patriot king." It was a great ideal, but was worked out by small men. And the consequence was that instead of abolishing party, the King's endeavours only made a new party, maintained by the same old methods of corruption that had been the weapons of the Whig oligarchy. Whether George would have succeeded better had he been self-denying enough to accept the alliance of Chatham is doubtful. Chatham's policy on many matters was eccentric, all but impossible, and his want of health at any rate prevented him from having a career. As it was, after many failures, George found in North the man who would be *his* minister and nothing else.

The story of this ten years' struggle is told in great detail, and the characters of the statesmen of the time are carefully described by Mr. Hunt, we would not say with a mixture of praise and blame as in the old histories, but in the newer historical spirit of setting forth the whole truth. This remark applies also to the story of the war with the American colonies. There is neither what has been the fashionable humility of declaring that England was entirely in the wrong, nor, on the other hand, the attribution of all the blunders to George III. It is pointed out that the English people at large were on the King's side, and that it was only statesmen opposing for the sake of opposition or merchants who suffered from interruption of trade that were in favour of the American contention. Franklin is no longer the simple hero of our childhood, and Fox's weaknesses are duly described. Mr. Hunt thinks that George III.'s personal rule came to an end with the failure of

[1] Political History of England." Vol. x., 1760–1801. By W. ıii.+495 pp. Vol. xi., 1801–1837. By G. C. Brodrick and J. K. ham. xix.+486 pp. (Longmans.) 7s. 6d. net each.

his American policy. He says (p. 229):—"The King was defeated. His system of personal government through ministers supported by his influence in Parliament received its death-blow from the ill-success of the American War. Before long he adopted a better system; he found a prime minister who could command the confidence of the nation, and he yielded himself, not always willingly, to his guidance." In this matter we would, with all due deference, submit an alternative explanation. The King still governed, even with (the younger) Pitt, and when that statesman came into collision with the King's conscience he had to withdraw from office. It is true that the old corruption ceased, and that under the stress of the French wars Pitt was supported by all but a handful of the nation and the Parliament, but the first thirty years of the nineteenth century saw the King's influence still strong, till it was destroyed by the revolution of 1832.

In the story of the wars in both these volumes we feel the influence of the naval school of historians and of Captain Mahan's works. We get more than the details of the great fights. Mr. Hunt also feels the effects of our late Boer War, to which, indeed, he sometimes alludes. And his condemnation is strong of those who take the part of the enemy. In the eleventh volume there are many modifications of previous judgments. Canning and Castlereagh were more nearly alike in their policy than used to be represented. Liverpool is praised for quietly conducting the administration. Whigs were not the only ones to introduce even constitutional reforms. The dismissal of the ministry in 1834 was not entirely the King's doing, but was suggested by Melbourne himself. Specially interesting are the comments on Catholic Emancipation (1829) and the new Poor Law. They were the effects, to a large extent, of Benthamism, and would not have been carried at any other time. If the authors of Catholic Emancipation had foreseen the results thereof, they would not have granted it. The new Socialism of our own day would not have made the Poor Law of 1834.

There are many other matters of which we might speak, but we close with a comparison of two opinions. The authors of vol. xi. say (p. 314): "The rebellion against tithes (in Ireland) . . . . had not the semblance of justification in law or reason. Every tenant who took part in it had inherited or acquired his farm, subject to payment of tithes. . . ." Mr. Hunt says (x. 92): "The tithe was specially burdensome to the poor, both because the rich pasture-lands of the wealthy were exempt from payment, while it was levied in little plots worked by the plough or spade of the peasant. . . ." While such authorities differ, when shall we get the whole truth about Ireland?

Preparatory Papers in Latin Grammar. By W. T. Hawkes. 45 pp. (Longmans.) 1s.—This book contains thirty-six pages in miscellaneous Latin grammar of the familiar type. It will be found useful in revision, so long as separate grammar papers are set in examinations.

FAIRY TALES OR SCIENCE?[1]

MR. SETON is one of the best-kno the writers who, combining distingu literary gifts with an intimate know of the daily lives of many kinds of an have responded to the increasing d for interesting books on the lighter a of nature-study. In this he has been emi successful; his stories have become dese popular, and have won praise on all hands. power of investing his subjects with a "human interest" is counted one of his h recommendations, and in this his latest bo power is perhaps drawn upon to a greater than in any of his previous works which member. The title, "Animal Heroes," in leads one to expect accounts of animals in certain estimable qualities are displayed, a doubtless attract all readers who take deli what may, without offence, be called the mental side of natural history.

The author defines a hero as an individ unusual gifts and achievements, and the d tion certainly applies to each of the eight a whose lives and adventures he relates. S definition would, in general, hardly cove ground, but Mr. Seton implicitly amplifies the stories themselves: the dauntless cour a bull-terrier, the social instincts of a wol "love of home" of a homing pigeon, f amples, being skilfully held up for the admi and sympathy of the reader.

In thus implying that certain qualiti animals are identical with the human which receive the same names, Mr. Seto himself open to some criticism. Absence in a well-bred bull-terrier is not nece courage in the ethical sense of the word, a homing instinct of a pigeon is not nece more admirable than the same instinct limpet.

Heroism, as we understand the term, is, be admitted, impossible to any creature w not self-conscious; and, therefore, to at heroism to an animal is implicitly to asse the animal is capable of thinking about it feelings. To the average reader this may a point of small importance, but it really fur the test by which the work is to be judge only of Mr. Seton, but also of a host of popular nature-writers, who rely chiefly upo is called "human interest" to make their s stories and studies attractive.

If we assume that animals possess sel sciousness, we must logically credit them with a moral sense of a sort, and with reas powers and forethought which seize and ho imagination of the least scientific of readers on the other hand, we believe that anima mere automata, even such classical studie

[1] "Animal Heroes." By Ernest Thompson Seton. 363 illustrations. (Constable.) 6s. net.
"The Religion of Nature." By E. Kay Robinson. (Hodder and Stoughton.) 3s. 6d.

ıose of Lord Avebury and Fabre upon
lose much of their grip upon the popular
and a great many recent nature-books fall
into the same category as the fairy tales
s Christian Andersen. A "fairy" tale of
g and moral (or immoral) animals may, of
be of enormous value in stimulating the
ıtion, *mais ce n'est pas la guerre*. It may
llent literature, but it is not science.
adays, when it is the fashion to take it for
l that very many animals reason, suffer,
joy as we ourselves do, it is well to bear
l that there is another side to the question,
ıt not only such philosophers as Kant and
but even Darwin himself, explicitly stated
elief that no animal is self-conscious.
Robinson, the editor of *The Country-Side*,
an interesting contribution to the subject
"Religion of Nature," and develops what
him the logical consequences of this con-
He shows that many of the actions
ıppear to furnish evidence of moral sense
elligent motive in animals are quite explic-
the assumption that they are instinctive
intelligent. He points out that the usual
ıur of an injured animal is no proof that it
ring, for the sensitive plant visibly shrinks
ses its leaflets when it is touched. On the
and, he does not, in our opinion, satisfac-
rove that the animal does *not* consciously
in—it is notoriously difficult to prove a
e—and many of his readers will scarcely
ared to accept his conclusion that "if we
move human consciousness from the earth,
ld of animals would contain no more happi-
unhappiness than the world of plants."
assumption that the possession of self-
usness sharply divides mankind from all
reatures, Mr. Robinson builds up a theory
ion which, he claims, is in harmony with
c knowledge.
ugh Mr. Robinson fails, we think, logic-
establish his main theory, he certainly
it clear that the amount of suffering in
is far smaller than is generally supposed,
this assurance alone all lovers of animals
grateful to him.
wo books here noticed—so entirely differ-
im and treatment—have this in common:
intentionally emphasise the importance, in
cational methods, of preserving a rigorous
on between mere fancy and hypothesis—
attractive—and sound logical principle.
school-subject is there need for greater
e in this respect than in nature-study,
it is the one subject which is as yet
safeguarded nor hampered by tradition.

Lessons on Great Truths. By A. K. Parker. (Methuen.) 1s. 6d.—This is a helpful little book
ers who would put into their children's minds
we say, draw out from their children's hearts?)
truths of religion. The child will not have to
hen he grows up what this book has enforced.

TACITUS AND OTHER ROMAN STUDIES.[1]

THIS is a charming book, written with the spirit and grace and the sense of proportion which we expect in a Frenchman. M. Boissier in particular touches nothing which he does not adorn. His translator has done his task well; rarely does he slip into a vulgarism such as "like" (p. 19[3]), or leave a word unnecessarily untranslated such as *genre* (p. 68). The book thus presents itself to us in an attractive form. No less welcome is it for its matter. There is need of a sensible estimate of Tacitus, of whom so much evil has been said. M. Boissier, however, will not allow the charge of insincerity, still less of wilful falsification, which is sometimes brought against him. By a thorough examination he is able to show that Tacitus has done no more at worst than incline to the gloomy side. And who would fail to do that, if he had passed through such experiences? The wonder would have been if fifteen years of tyranny and humiliation had not left a deep mark on him. A much shorter spell of humiliation left a deeper mark on Swift. M. Boissier brings the works of Tacitus into relation with his life, and he is able to throw light on both by judicious reference to Pliny. His conception of the historian's duties, and how he carried it out, forms the subject of one chapter; others deal with his judgment on the Caesars and his political opinions. All these subjects are treated with sound learning and a light touch. Both the student and the general reader will find this book worthy of their attention.

In the same volume are contained three other essays: on the Schools of Declamation at Rome, the Roman Journal, and the Poet Martial. The first is so intimately bound up with education that it has more than a passing interest here; and it has also a bearing on Tacitus, whose earliest work, the "Dialogue on Orators," is spoken of with just praise. The second deals with a subject which is not often treated, and in a characteristic way. It is amusing to find the author apologising for the Romans because they had not Parisian daily papers. He comes to the conclusion that they did very well without them, and we are quite at one with him in his view that our boasted modern inventions are not indispensable. We hope he is correct, too, in his optimism: "What is right always ends by coming to pass."

Martial, finally, is a useful foil to Tacitus: and his flattery of the great is enough to suggest that we have not lost much in the loss of those historians who took the imperial side. We have Velleius Paterculus as it is, and much good he does to us. On the whole, we may be content with our Tacitus; and here we can agree with M. Boissier that the right has come to pass in the survival of his works.

[1] "Tacitus, and other Roman Studies." By Gaston Boissier. Translated by W. G. Hutchison. x.+277 pp. (Constable.) 6s. net.

SCHOOL TRAINING FOR THE HOME DUTIES OF WOMEN.[1]

By M. CADE,
Inspector of Domestic Economy Instruction to the L.C.C. Education Committee.

ANOTHER volume of special reports dealing with the school training for the home duties of women has been issued by the Board of Education. These reports treat of the teaching of domestic subjects in Belgium, Sweden, Norway, Denmark, Switzerland, and France in primary, secondary, adult, trade, and purely domestic economy schools. They have been drawn up, in all but two cases, by persons directly concerned with education in the respective countries. The present and the preceding volume show fairly comprehensively to what extent domestic subjects form part of the recognised curricula of the schools of other nations.

The history of the introduction of domestic subjects into the schools of the countries dealt with is both instructive and interesting. A reaction such as we are feeling in England had set in against the one-sided intellectual education, and more especially with regard to girls' education against what the late Prof. Withers characterised as the "sterile imitation of boys' schools on their worst side." Mrs. Hierta-Retzius, vice-president of the International Council of Women, and pioneer of domestic economy teaching in Sweden, remarks:—

"In former days, the Swedish wives of the upper as well as of the lower classes were very clever at housekeeping, cooking, baking, washing, needlework, embroidery, dressmaking, spinning, and weaving. They were a healthy, strong race of women, active in their homes, and very capable in every kind of practical work, in which they taught their daughters to take an active part at an early age. Neither mothers nor daughters were nervous, nor longing for pleasures and a 'change,' which is so characteristic of our age. But as industries were developed, many things, formerly manufactured at home, were bought ready-made. The girls' day schools for the upper classes developed, higher studies were pursued. The primary schools became more numerous, and were made obligatory; the daughters had to leave home early in the morning, and did not return till dinner was ready; they had no time, even in the afternoon, to help their mothers, for the lessons had to be learnt, and the mothers, who admired their children's 'great learning,' did not want them 'to slave' with practical work, which came to be considered as 'lower work.' The young thus became more and more unable and unwilling to help their mothers in household duties. It is easy to imagine how much knowledge of and liking for household duties and practical work was to be found in the generation succeeding the one just described."

In Switzerland it is noted:—

"that girls of all classes learn less and less at home, and in order to keep up the standard of home life opportunities must be furnished for them to learn homework outside the walls of home. . . . The domestic must not be neglected because of the wider train open to girls. It must be awakened and syste trained, that it may not be lost or crowded out other interests, and if a woman of any class u to manage a home, she must understand its working."

A Labour Commission appointed by the Government reported that:—

"One of the principal causes of the misery of ing classes is the absence of order and econor home, the ignorance of the woman, her incom the performance of domestic work. Consequently trators, masters, and workpeople alike demand that will ensure to the girl of the people, with a knowledge of domestic economy and hygiene, t to manage a home. It is towards the school tha who desire to see the sentiment of personal di spirit of order, activity and economy, the love awakened in our girls; they claim that it is at th school, above all at the housewifery school, domestic education of our girls should be undert

In the report on the Danish schools it that:—

"Until recently, the idea of making cookery, jects of instruction in schools was thought qui place; it was considered entirely the business of to train girls in household duties. But as time complaints of the deterioration of household sk classes grew louder and louder. School, and p for school, occupied an increasing proportion of of the girls in the higher schools, while am poorer classes the increase of women's work in &c., made it difficult, if not impossible, for m teach their daughters, even if they knew how to c the seventies and eighties a few advanced edu began to advocate the introduction of Domestic into schools, not only for the sake of the futu but also, as a good educational discipline, for th the schools, whose work had been getting too of touch with practical life."

The teaching of needlework had been i for some time past as part of the educ girls. The instruction now became m tematised, and the high standard of pr attained in the Continental schools is pr These reports contain many well-grad labuses of needlework, with methods o ing, which should prove most useful to in primary, secondary, and domestic e schools.

The introduction of household occu apart from needlework, is in all cases recent date. Instruction in domestic subj parently often owed its initiation to privat prise, but it was gradually included in th cula of primary, secondary, and adult s Many helpful and suggestive schemes o will be found in these reports. It is inte to note that the experiences of the Scotti English schools, especially those of th London School Board, were largely utilise dealing with these subjects. In each ca

[1] Special Reports on Educational Subjects. Vol. xvi. "School Training for the Home Duties of Women." 352 pp. (Wyman.) Price 3s. 6d.

tion has developed on lines peculiar to the y in which it has been introduced, and in respects improvements have been made on h methods, so that we, in turn, have some- to learn from these Continental schools. uration of each weekly cookery lesson in imary schools seems to be from four to ours, and almost invariably includes par- of the prepared meal by the class as part lesson. This practical testing is regarded logical completion of the lesson, and is at educational value, providing, as it does, tion in serving, behaving, and waiting at In addition, the girls acquire a taste for but well-prepared food which would other- e despised and neglected. In some in- the cost of the meals is covered by a fee paid by each pupil, and in other cases aterials used in cooking appear to be re- as consumable stock. A certain amount dental housewifery and laundry-work is also d.

it is known as the Gothenburg system has to recommend it. In place of a weekly of four or five hours, "a class of twenty- irls receives a course of instruction lasting consecutive school days, each school day on being of seven hours' duration." In lages and small towns the instruction is chiefly by peripatetic teachers, who take ecessary equipment with them. Further s of instruction are arranged in adult and ation schools, which are not always even- hools. Housewifery, meaning the care of use, does not appear to be taught in the y and secondary schools, but receives a are of attention in the residential house- g schools, of which those in Switzerland most highly developed. In Belgium the al institutes give both a trade and domestic y training, in which the former or latter minates, according to the type of school, Sweden workshops for children, somewhat ous to the Recreation School at the Pass- Edwards Settlement, have been established. nany instances the training given to the rs seems inadequate in comparison to the ance of their work. These reports merit careful attention at this time when the n of the right education for girls is being ered in many quarters. There is much to e that educationists in various European es are by no means satisfied with the e imitation of boys' schools" for girls of ss, and it is most instructive to note how d all are casting about for a solution to oblem how to give a liberal education to l, and at the same time train and preserve sentially womanly qualities.

summary of a plea for higher education omen as women, addressed by Madame ampérière to M. le Ministre de l'Instruc- ublique, and included as an appendix to port on the French schools, will repay study.

PRACTICAL STUDIES FOR SCHOOLS.[1]

The intellectual and moral training, and, indeed, to some extent the physical training also of boys and girls between the ages of seven and fourteen years, would be greatly improved if active and constructive work on the part of the children were largely substituted for ordinary class teaching, and if much of the present instruction were made to arise incidentally out of, and to be centred around, such work.

The aim and purpose of elementary instruction for many years was nothing more than the enabling of children to read and write and reckon. If we include in reading not only the art of reading aloud, but the cultivation of a taste for reading and the ability to apply the knowledge so gained to the practical needs of life, and if in teaching a child to write we teach him at the same time to express his ideas intelligibly in written language, and if, further, the child is practically taught the simplest rules of arithmetic, such a training would constitute all that is most essential in primary education. Gradually, however, the curriculum of elementary schools has been enlarged, and the problem of primary education has been complicated by the multiplication of subjects and by the introduction of many of the faulty methods of teaching which were for many years, and are still to some extent, prevalent in secondary schools. If practical studies, whether experimental or observational, or both, are to dominate the teaching, a fundamental alteration must be made in the methods of instruction, and certain subjects must be omitted from the curriculum, which is already overcrowded.

It is desirable that children from the earliest age should be taught to think. It may be said that thinking is a mental process that can be cultivated only at a later stage in the child's training. But this is not so. No one can have watched a child at play without recognising that, in the adjustment of the end in view to the means at the child's disposal, he is exercising the reasoning faculty. It would seem that it is only in school that the thinking process is allowed to remain unexercised and dormant. In order, however, that a child may think, he must be actively occupied with the consideration of concrete things. This, as is the case when the child is at play, is essential, and the contrast is very striking between the directed attention of the child when actively engaged in some work that interests him and his listless attitude in the school classroom. During the greater part of the school hours the "doing" faculty of the child is almost entirely ignored, and the training which he receives fails in consequence to develop along serviceable lines his natural spontaneous activity, and to encourage his ability to initiate and construct. These faults, inherent in our present system of elementary education, would be, it is believed, to a great extent removed if practical studies, involving hand-work and simple experimental methods of acquiring knowledge, were made an essential part of the teaching in every elementary school. At present no obligation exists to provide such practical teaching.

Exercises involving progressive handwork, experimental methods, and subjects of instruction requiring accurate observation may not produce the same manifest and repro-

[1] From the report of a British Association Committee, consisting of Sir Philip Magnus, M.P. (chairman), Mr. W. Mayhowe Heller (secretary), Sir W. de W. Abney, Mr. R. H. Adie, Prof. H. E. Armstrong, Miss A. J. Cooper, Miss L. J. Clarke, Mr. George Fletcher, Prof. R. A. Gregory, Principal Griffiths, Mr. A. D. Hall, Dr. A. J. Herbertson, Dr. C. W. Kimmins, Prof. J. Perry, Mrs. W. N. Shaw, Prof. A. Smithells, Dr. Lloyd Snape, Principal Reichel, Mr. H. Richardson, Mr. Harold Wager, Miss Edna Walter, and Prof. W. W. Watts, appointed to report upon the Course of Experimental, Observational, and Practical Studies most suitable for Elementary Schools. Presented at the York meeting of the Association.

ducible results as those which occupy so large a part of the present curriculum. But the results would be more lasting and would afford an intellectual training exceeding any that may be obtained from literary studies alone. It is generally acknowledged that much of what is learned in the elementary school is forgotten soon after the child has left school, and a great part of the heavy cost of his education is thus practically wasted. The studies commonly pursued, owing to some extent to faulty methods, fail to fix in the mind the knowledge hastily acquired, and fail also as instruments of sound mental discipline, or as the means of forming permanently useful habits of thought. Much of what is now taught as arithmetic and English is open to this criticism. Time might be found for more practical methods of teaching by throwing overboard a large amount of the instruction given under these heads, and by co-ordinating to a great extent the teaching with the practical exercises which should form the basis of elementary training.

By associating the teaching of arithmetic and English with constructive work, the interest of the child would be stimulated and his education would be more closely directed to the subject of study. Moreover, he would not only acquire habits of accuracy by careful observation and manual exercise, but would learn to use number as an instrument of exact measurement, and, by describing what he had seen and done, to express his ideas in clear and intelligible language. Reform is much needed in the teaching of these two subjects. Too much time is spent in teaching rules and processes which are seldom needed and which are far in advance of other subjects of more immediate value. The ease with which the results of arithmetical work may be tested by teachers, examiners and inspectors, has had the effect of exaggerating its importance, when pursued beyond its mere elements, and of encouraging practice in the working of complicated exercises of no possible practical value. It is in the teaching of arithmetic that the greatest reform is needed. The exercises should be closely connected with drawing and with measurement, and questions involving money calculations should be definite and concrete and have reference to the cost of materials with which the pupil is already familiar. There is no need for the use of any text-book. The things by which the child is surrounded and the questions arising out of the work with which he is practically engaged afford abundant opportunities of illustrating the simple processes which are all that the child need learn at this stage of his studies.

The ordinary English studies may be similarly modified and curtailed. Transcription, spelling, writing and dictation should all be included under the head of composition. Grammar, as ordinarily taught, may be regarded as altogether unnecessary and useless. The learning of history should be associated with geography, and although some systematic instruction may be desirable, much of what is most needful may be taught incidentally. The reading lessons should be so chosen as to impart a knowledge of national history and to excite the child's curiosity to know more, and for a certain time a child should be left among books, free to read what he likes, describing afterwards what he has read. Reading aloud should be cultivated, and composition should be taught not by requiring the child to write essays on subjects about which he knows next to nothing, but by describing things he has seen, events in which he has taken part, or work which he has done. By thus associating the teaching of arithmetic and English subjects with practical studies, which keep the child actively occupied—always putting forth energy, instead of passively taking in facts—time would be found for constructive work *and careful* observation, and the results of elementary education, instead of being, as they now are, fleeting and aimless, would create in the child aptitudes for further study and activities which w of the utmost value in his subsequent work.

It may be said that in such a scheme of education there would be no uniformity. Po But uniformity is not in itself an end to be The uniformity ideal cramps the initiative of t There is ground for apprehension that the orga secondary education under State control may tenc that variety and diversity of method which has advantages. The character of the teaching in schools must vary with local requirements and ings. But although the principles underlying t should be very much the same, there might be the greatest variety in the subjects to the which those principles are applied. For this r undesirable to indicate too definitely the exact studies most suitable to elementary schools. be left to the judgment and discretion of the he whose training should enable him to arrange practical study adapted to the requirements of schools. Certain general principles, however, r down, and typical courses might be prepared s progressive character of the instruction, and its with such subjects as arithmetic and English history, geography, literature and composition.

The first thing to determine is the kind of pra most suitable to local requirements and to th conditions of the school children. The prac should in all cases begin with Kindergarten properly arranged, and with observation of comm of the school surroundings and plant life. Until standards are reached there need be no differe training of boys and girls. The Kindergarte should be followed by a course of manual the case of boys, and of domestic teaching i of girls. For children of either sex there sh parallel course of simple lessons in experiment to be varied in urban and rural districts, and i to be adapted in the later stages to constructi the case of boys, and to needlework in the case o

The course of instruction in constructive w consist largely, but not exclusively, of exercises of wood-working and metal-working tools. Alth is undoubtedly the most useful material for ma ing, other familiar materials should be employ exercises, which should be as varied as possi be such as help in the development of the faculties and embody the representation of an i importance should always be attached to accur the maintenance of a high standard of workma for its moral influence and with a view to the f useful habits. This part of the subject has beer with in various papers by persons who have d siderable attention to manual training. It is however, to repeat here what was stated in a the subject read at the meeting of the Ass Cambridge in 1904, that the course of instructio distinctly progressive, and should be made throughout the standards by means of simple requiring the use of such tools as may be man very young children.

Outline courses of instruction in nature-stu perimental science, and in domestic matters, advantage be consulted by the teachers, but official should be regarded only as indicating some of th which might be selected for study in elementa

s in composition, geography, arithmetic and drawing, have close reference to these subjects, leading the o think for himself, and to desire further knowledge, enable him to realise more fully the meaning of the n which he is engaged.

ul suggestions as regards elementary science lessons found in the syllabus prepared for the Irish National s, entitled "Notes for Teachers in National Schools." teaching of domestic matters to young girls should a very elementary and practical character. The lessons to be given in connection with the subject have for their main object the inculcation of habits uracy and cleanliness. The importance of exact l, and of using vessels which are scrupulously clean, est be illustrated by the simplest chemical manipula- nd the school should be furnished with a room—not arily a laboratory in the sense in which that term is lly employed—in which easy experiments may be per- by the children themselves. As lessons in cooking be given usefully until the child has acquired some ılative skill, and has reached the higher standards, etter that the courses of experimental science should the practical teaching of that subject. It is a for consideration whether the science lessons should ıbined with the teaching of cooking, illustrating as ise some of its underlying principles, or whether they run parallel with the instruction or should precede ıctical teaching of the subject. Something may be r each of these plans, but the balance of advantage avour of the last, attention being directed to the re- f the scientific experiments with which the child would iously familiar in explanation of cooking processes.

selection of subjects for the science lessons and the ement of experiments to be performed by the children lves demand much thought on the part of the teacher, ould not be undertaken without careful preparation. should be such as would find full illustration in the al teaching not only of cooking, but of housewifery eneral hygiene. The lessons in cooking must be ally practical. Demonstrations in class will not This is generally recognised, but it is important he dishes to be prepared by the pupils should be d with a view to economy, and should be such as reasonably be provided in a poor man's home. All should be avoided. Nothing should be thrown away, e child should be shown how to utilise portions of which are too often regarded as useless. At best, er, only a foundation can be laid in an elementary for further instruction in evening classes and in ary schools, but the foundation should be solid and able as far as it goes.

evident that teaching of the kind here indicated can n only by well trained teachers. To secure instructors re competent to make practical studies the essential elementary education, the principles underlying the lum of training colleges would need revision. It is of the utmost importance that teachers in training receive a sound literary education. No teacher can ient without literary culture. It is equally necessary ıe training college should afford adequate instruction practice of teaching and in the history and theory of ion; but, in addition to these subjects, practical work e methods of directing it should occupy a much more ıent part in the curriculum than is at present allotted

study of experimental science, whether physical or cal, must be pursued so far as to enable the student e a firm grip of his subject, and to be capable of arranging courses of lessons suitable to the requirements of children. The general training should be such as will enable the teacher to correlate the ordinary subjects of school instruction with the practical studies to be developed in the school. This is a branch of pedagogy to which it would seem that very little attention has been so far given. The dominating influence of examinations which teachers are required to pass, the insufficient time devoted to training in practical studies, whether in the laboratory or workshop, are among the causes which prevent training colleges, as at present organised, from affording the kind of education which experience has shown to be necessary to enable teachers to direct and to take part in the practical training of their scholars. It has been well said by an inspector who has had large experience that "few teachers on leaving the training college have realised what thoughtful teaching means. As a theory, they will agree that formation of habit and character should be, perhaps, the first aim of a school, but, finding it troublesome to adopt as a working hypothesis, they too often attempt to console themselves by calling it faddism. They consequently fall into routine methods and lack initiative, and, failing to realise that inquiry is the *rock-bottom* method in all teaching, they thankfully accept rules that will save them the trouble of thinking."

The reform of the training college curriculum is, therefore, the condition precedent to any satisfactory change in the character of the teaching given in our elementary schools; but it is no part of the work of the Committee to do more than to indicate in the barest outline the direction that such changes should take.

Of equal importance with the improvement of the training college curriculum is the appointment of inspectors who have themselves received a thorough training in practical studies and experimental teaching. An inspector who may have obtained the highest degree at one of our universities does not necessarily possess the qualifications for a good inspector. With the abolition of the system of payment on results, the duties of the inspector have become much more onerous, and different qualifications are needed for the proper discharge of his duties. He must be well grounded in the principles and methods of elementary teaching, in order to be able to ascertain whether the teaching is sound and efficient. He must be able not only to criticise but to suggest, and his criticism and his suggestions must be founded on personal experience, and must be directed towards showing both how good work may be done and how errors may be avoided. Such inspectors might be selected from among head teachers, not necessarily of elementary schools, who have acquired experience in arranging courses of study, and have been found most successful in organising and imparting instruction on the lines laid down in this report.

It will be seen, therefore, that in order to effect reforms in our elementary education in the direction of giving due weight to practical studies, it is necessary in the first place that the curriculum of our training colleges should be modified by introducing, to a larger extent than has yet been done, laboratory and workshop instruction, and by directing the attention of the students to approved methods of experimental teaching. It is equally essential that sympathetic and experienced inspectors should be appointed, who will pay due regard to the correlation of the several subjects of instruction, and will see that undue prominence is not given to any particular subject on account of the comparative facility of teaching it, and who, above all, will endeavour so to direct the school work that it shall encourage thinking, and develop constructive ability and aptitudes for study on the part of the children.

THE TRAINING OF THE TEACHER OF DOMESTIC SCIENCE.[1]

By MARY E. MARSDEN.

IN the early days of domestic science teaching almost the only qualification demanded of the teacher was the power of skilful manipulation. Much more is expected of the domestic science teacher of to-day than of her predecessor. Not only must she be proficient in the arts she practises, but she must be able to give reasons, based on scientific knowledge, for the processes she employs. She must understand something of child-nature and the laws of mental development, so that she may make the work progressive and encourage thought and initiative in her pupils, rather than unthinking imitation.

These increased demands on the present teacher of domestic science can be met, in the first place, by training as teachers only those who have had a good previous education. Students who have had a good secondary education are those best fitted for the work. The education given at a public high school in which careful training in the general principles of elementary science is included is an excellent basis for the special training in domestic science.

It is further desirable that, as a test of general knowledge, students should have passed some examination such as that of the London University Matriculation, or the Senior Local examination of the Oxford or the Cambridge University.

The ideal preparation for a domestic science course would be a science degree followed by the special training in domestic science. Until, however, the salaries have reached a much higher rate for teachers as well as for organisers of domestic science, this will not be practicable. The salaries of those engaged in the arduous and responsible work of the training of domestic science teachers are very low in comparison with the salaries paid to those who simply teach children.

So far as I have been able to learn, the London University, at the Goldsmiths' Training College, is the only authority that has offered for the teaching of domestic science an initial salary proportionate to the work. If our training schools are to be efficiently staffed, educational authorities must offer considerably higher salaries than those given at the present time. The teacher of domestic science cannot afford to do her work mainly from philanthropic motives.

In the meantime, however, it rests with the training schools to require a higher standard in their entrance examinations. From the fact that some training schools require no educational test, or an extremely low one, some people, including many headmistresses, have been led to believe that the girl whose attainments at school have been below the average can take up domestic science. This is an entirely wrong idea; such a girl is inevitably a failure as a teacher. There is one development of domestic science teaching which especially demands that the teacher shall have a good secondary education. I refer to domestic science teaching in the higher type of secondary schools (that is, those in which the pupils are not mainly drawn from elementary schools). If domestic science is to rank with other subjects in the curricula of such schools, the teacher must take equal educational and social rank with her colleagues. She can only be a capable teacher of her special subjects if a high standard of gen tion has been attained previous to her training.

TIME OF TRAINING.—This is usually two years who take cookery, laundry-work, and housew If students take needlework and dressmaking i the course generally lasts for three years. T take high-class cookery or advanced dressmal take an extended course of training.

SCOPE OF DOMESTIC SCIENCE TRAINING.—This is we might almost say, yearly. About ten yea certain schools, teachers of laundry-work were who had received only three months' training. Th not only training in the art of laundry-work, bu ing it. To-day, in the same schools, the laundry-work is not appointed at the ordinar salary unless she is qualified to teach cookery wifery too. This requires a two years' course of

The idea is becoming general that we shou training the teacher of domestic science rather teacher of one section of it (such as laundry cookery, or dressmaking).

SUGGESTED SCHEME OF TRAINING.—Such a s cludes:—(*a*) *Arts.*—The practical work of cooker work, and housewifery (including actual housek the keeping of real, not imaginary accounts work and dressmaking. (*b*) *Science.*—Elementar measurements, chemistry, hygiene, physiology, and sick nursing.

These should have their right place in a domestic science. They should be treated as th tion of the empirical arts. Unless the connectio science and the work done in kitchen and laundr an essential part of the scheme of teaching, science loses greatly, whether regarded from th educational or the utilitarian aspect. The domes teacher should show her pupils the necessity f standing the reason for every method they en tracing causes of failure, and for constant effor cover better and easier methods of work. The laboratory should be regarded as a place for th out and elucidation of problems or difficulties m the ordinary course of cookery, laundry-work, a wifery. Scientific training leads to desire to e to question methods in general use, and readines new and better ones. It is this attitude of mi we should encourage in teacher and in pupil. science should include the methods for testing, and valuing the ordinary materials and foodstuf laundry and kitchen. If the training is to includ science, more time must be given to it than possible hitherto. While we are not endeavourin physicists or chemists, yet we must realise that economy is really applied physics and chemistry a very high order of complexity. Frequent c between domestic science and science teachers are in order that the subjects may be satisfactorily co-

INSTRUCTION AND PRACTICE IN METHOD OF TE (1) The elements of psychology, the study of class ment, and school organisation. (2) Blackboard and elocution. (3) Actual practice in class teachin

It is most *important* that practice in teaching gained by teaching pupils from both elemen secondary schools, and also by teaching adults. varied the teacher's experience, the more efficie she carry on her work. To be successful, a teac be adaptable. She cannot be adaptable if she trained to teach in one groove; in fact, she ca avoid being stereotyped.

[1] An abstract of a paper read before the Educational Science Section of the British Association at York, 1906.

Board of Education regulations as to recognised a cookery diploma insist that the eighty hours g practice which training schools find adequate ction of the work must all be given in one type -viz., the elementary. It is only possible to give wider training if additional hours *beyond* the limit are given. The idea that a teacher will one grade of children better because she has ght any other grade, seems illogical.

NAL AIDS TO THE TRAINING OF DOMESTIC SCIENCE —The training schools of domestic science should ted on lines similar to those of secondary train- es. A reading-room and reference library, as common room where students can meet after ours are over, should be provided. Literary and societies and reading clubs should be encouraged e students.

ecialist teacher of technical subjects loses much ndency to underestimate, possibly to ignore, the iterary interests. Even during the busy years of it is desirable that the students should be d to take an interest in such things as general and the history of the day. These, though direct bearing on the work, are necessary as a culture.

TORY AND CURRENT EVENTS.

the summer that has just ended, the Japanese artment has conveyed teachers and students of the d higher schools and colleges to Manchuria and e of charge, though the beneficiaries have had to t of the cost of their food and lodging during the Such things were not possible a hundred years ng to the impossibility of communication. And larger Empire, separated by so many more miles than the Empire of our "Far Eastern" allies, so easy for us to imitate what is certainly a good But in other ways, and on a more limited scale, be well if we were to know practically more of re of which we here, in the British Isles, form part which yearly is becoming a smaller fraction hole. If the map of the world were drawn so th Africa were on the left and Canada on the ere would Great Britain come in? Would it not an outlying part of the Empire, while India or would form the centre?

NG that the decision of the Court of Appeal in the ling educational case is final—there is a possibility r appeal, and therefore of reversal—what an g light it throws on our methods of legislation! e very beginning of our Parliamentary history ve been attempts made to get together an "fit" to do what was required of it. And e all failed. Legislation requires specialists, but sh people distrust specialists. Our latest historians hat mediæval legislation consisted more of pro- of ideals than such laws as Austin would regard f a sovereign, and that we must not suppose that aws were on the statute-book they were therefore ut or obeyed. And to-day we collect some six or ndred gentlemen in the House of Commons who necessarily any knowledge of the laws they are alter. Something is done by way of consultation cialists, and the Bills are drafted by lawyers; but, what a chaos English law still is, and increases If we were planning a Utopia, is that such a ing assembly as we should devise?

WE are constantly reminded, in the present-day history of our British Empire, of the history of that other empire which we built up or won and then lost before the eighteenth century had closed. As those quarrels arose because the home and colonial authorities could not agree as to the finances of the necessary defence against possible French attacks on our North American dominions, so now there is friction between Australia and Great Britain on the arrangements, financial and other, for providing a navy for the defence of Australia against the Pacific ambitions of other European States. Only last July, at a meeting representative of the Chambers of Commerce of the Empire, it was unanimously agreed that "it is the duty of the self-governing Colonies to participate in the cost of the defence of the Empire, but that the Colonies claim the privilege of keeping their own initiative as to the nature and mode of help which they may agree to offer." Is this, in its possibilities of divergence, an illustration of the evils of ultra-local government? or of the dangers of voluntaryism?

IN 1904 there was erected on the march between Chile and Argentina a colossal statue of the Christ. So busy was Europe at that time in wars and rumours of wars that the news of this symbolic event has only just reached us. But it seemed to us so important, that even now we would record it among our "current events." Chile and Argentina have had many disputes arising out of frontier squabbles, but these are now happily at an end. And to commemorate the establishment of an eternal peace, the peoples of the two countries have, at the instigation of a Christian bishop, erected this memorial. The "working" men and women of the two countries have placed on the pedestal bronze tablets with the inscriptions: "Peace on earth, goodwill to all men," "Sooner shall these mountains crumble to dust than Argentines and Chilians break the peace, which, at the feet of Christ the Redeemer, they have sworn to maintain." Many are the reflections possible on this significant event; but we must confine ourselves to reminding our readers of the memorial erected near Jordan by the tribes of Israel, and of the many "perpetual" peaces which have so often disappointed Christendom. *This* peace looks more promising.

ITEMS OF INTEREST.

GENERAL.

A SERIES of articles dealing with Public School Education, written chiefly by schoolmasters, commenced in the *Times* of September 10th. Up to the time of writing this note, the contributions to the series have been: (1) Classical Studies, by Mr. T. E. Page, September 10th; (2) The Teaching of Mathematics, by Mr. T. J. Garstang, September 13th; (3) The Teaching of History, by Mr. A. Hassall, September 15th; (4) Science, by Mr. W. D. Eggar, September 20th; (5) Modern Languages, by Mr. F. Storr, September 22nd. Mr. Page pleads with his usual dignity and force for a sensible consideration of the essentials of a liberal education attainable by the average boy at school. All men of science are not Philistines, nor are the interests of all classical scholars and teachers limited to the literature of the past. Let those who have noble aspirations, whether representatives of science or the humanities, unite to decide what should be retained of each group of subjects in the curricula of our schools. "For assuredly no form of education can justly be called 'liberal' in which the study of science and preparation for active life are not associated as their necessary complement with that study of polite letters to which classical learning is certainly the best, and possibly the indispensable, foundation."

MR. GARSTANG traces recent changes in mathematical teaching, the ideal of which he considers "will aim at that harmony of the abstract and concrete, of the general character and particular case, which, on the one hand, allows human imagination all liberty of suggestion, but, on the other hand, trains human reason for service in a hard material world of fact." Mr. Hassall believes that the teaching of history will certainly develop in schools. "At present the tendency in the public schools is to pay too much regard to mediæval and modern history, and to neglect ancient history; and there is a danger that too much time is being given to the mere acquisition of knowledge, too little time to the form of the essay." The text upon which Mr. Eggar writes is chiefly Prof. Armstrong's article, "Is School Science Worth Having?" in the May number of THE SCHOOL WORLD. If our technical colleges demanded a sound general education and perhaps less science Mr. Eggar thinks there would be an improvement in the work of the pupils. He "feels strongly that before a boy begins to devote more than half his time to mathematics and science he should have qualified in English, including history and geography, Latin, and either French or German. The best work in a school laboratory is always done by boys who have reached a reasonable standard in other subjects first."

MR. STORR lays down the sound principle that no teacher can now be considered efficient who cannot speak the languages he professes fluently and with approximate accurate pronunciation. He points out the folly of attempting to teach three foreign languages at once to a child of ten or eleven years, and shows that Greek might reasonably be omitted from the entrance scholarship examinations of public schools. But until the Universities of Oxford and Cambridge make French or German (with a *viva voce* test) obligatory in their entrance examinations, little improvement can be expected in the schools. It is proposed by the proprietors of the *Times* to publish this series of articles, with much other material, in book form, under the title of "The Public Schools from Within." The book will deal with all the more important aspects of public-school life and education, in a series of essays contributed by some thirty-five writers, who represent most of the leading public schools.

AMONG the subjects discussed at the annual meeting of the Library Association last month was that of the education of librarians. Mr. H. D. Roberts expressed the opinion that it should be a fundamental principle that no one should join a library staff unless he could produce satisfactory evidence of a good general education, and that no promotion should be made until the assistant gradually passed all the examinations of the association. In this connection he was pleased to notice a growing tendency on the part of the assistants to present themselves for these tests. The present examination syllabus has been in existence for three years, and the speaker deprecated any material modification thereof for the present. Mr. E. A. Baker advocated the inauguration of a more elementary course for beginners and one of a more advanced type for the more experienced assistants. Most of the speakers deplored the insufficient salaries received by the large majority of librarians, the president declaring that the wages of some foremen fitters were much higher. We fancy many similar invidious comparisons might be advanced in other cases, as, for instance, assistant-masters.

THE unsatisfactory position of assistant-masters in secondary schools, and the sacrifice of the Teachers' Register, were among the subjects dealt with by M Greene in a forcible address to the Incorporated tion of Assistant-Masters at the general me September 8th. In the course of his address, M remarked that while nominally ready to admit th tion depends upon the educators, the statesme country still act on the assumption that it deper upon departments, examiners, and inspectors. tions, inspections, and reports multiply, but th of the schoolmasters remains the same. W problem of problems is to attract the ablest of m noblest of professions, the assistant-master re most schools an unconsidered cipher, still in n absolutely at the mercy of an inconsiderate he while his salary remains that of a second divis The ancient theory was to find your inspiring leave all to him. But the modern theory, while it leaves the headmaster free, determines the curr public examinations and the methods of teaching tion and administrative regulation.

AFTER Mr. Greene's address, the following r relating to the Teachers' Register and the insp schools were considered by the meeting and unanimously:—(1) That there should be a re secondary teachers containing the names of thos ing the following qualifications: (*a*) a degre equivalent; (*b*) one year's post-graduate train recognised training college, or two years otherwi training is not post-graduate), with the diploma cate of the institution at which the training obtained, or two years' service as a probationer, a salary and under supervision, in a secondar specially recognised for the purpose, such probati certified as satisfactory by the Board of Educatio one year's continuous satisfactory service in a r secondary school. (2) That the Teachers' Regist contain a full record of: (*a*) academic att (*b*) training or probation; and (*c*) experience; Register should be kept up to date without exti and that all persons now on Column B should be the Register. (3) That the duty of forming and ing such a Register should be referred to a repr professional council with powers of co-optation. any person previously registered who does not name to appear on the reconstructed Register entitled to have the fee returned. (5) That the Education should enforce the Register by mea regulations for secondary schools. (6) That the H.M. inspectors of secondary schools should be the Board of Education in two parts: (*a*) a gen on the financial condition, buildings, and efficie school, which, if published at all, shall be *in extenso*; and (*b*) a detailed report, not int publication, which may contain criticisms and s as to the work of individual masters and forms.

MR. T. S. DYMOND, H.M.I., lecturing to the of the Royal Horticultural Society on September that 20,000 children in rural districts are recei tical instruction in gardening in elementary sc complained of the lack of attention given to this rural grammar schools. There are not more grammar schools where agricultural science is st Fault was found with the curricula of country schools, and the speaker suggested the institution on the physiology of plants in relation to the so on these lines is of the highest educational val the horticultural colleges were filled with pupils

h such courses their work would be much Science and practical horticulture ought to be nter-dependent subjects. Moreover, drawing, nd composition should be worked in with the rdening. Pupils could make a scale drawing den plots, work out the profit on the crops explain, in the form of short essays, the hods of cultivation.

on County Council has recently issued par- he evening classes about to be opened under The session began on September 17th in the ns concerned, the subjects of instruction in- metic, geography, history, composition, and ubjects, such as shorthand and book-keeping; nstruction of a more advanced character will n in correspondence, banking, accountancy, languages. The usual science and art classes t weekly. During the current session special been provided for the study of English litera- lectures will be given in six courses:— eare; (ii.) Cavalier and Puritan literature; ature of Anne's reign; (iv.) Dr. Johnson and raries; (v.) the romantic revival in English aspects of Victorian literature. More advanced se subjects also have been arranged. From a Council's circular, it is evident that no effort red to provide opportunities for instruction in chensive list of studies, ranging from laundry- ting from still life, from first-aid to geology, scholarships to the total value of £1,500 are Council to its students.

R, the president of Columbia University, and losely, have arranged for five hundred British visit the schools of the United States this e purpose of mutual help and criticism with scholastic systems. Already two thousand have been received. The visit will last from eeks from the date of arrival. Every facility will be placed at the disposal of the visitors, ment has been most carefully organised. Dr. pates great mutual benefits from the visit, n be little doubt that nothing but good can uch an interesting tour. All the branches of cation will be investigated. The chief towns e visited are New York, Newhaven, Boston, Washington, Baltimore, Quebec, Montreal, Toronto.

of Hygiene and Temperance, formed to pro- ntific teaching of these subjects, has arranged leven lectures during the coming session. Dr. ecture weekly at the Birkbeck College, com- October 5th. The fees for the course are nding students should communicate with the cretary, Miss St. John Wileman, 54, Laner- Streatham Hill, London, S.W. The Board nterested in its work as one of the direct f physical deterioration recently memorialised of the Board of Education, and received from rance of his cordial sympathy with their views, he inclusion of the two subjects in the curri- Code. The lectures about to be inaugurated to provide experts for teaching and lecturing, ught that many class-teachers will be glad of ity thus given them of adding to their

From the report of the third year of the Walworth Holiday School it appears that, on the average, 254 children attended fifteen days at the morning classes, and received instruction in games, ambulance, singing, drill, painting, and drawing. The afternoons were given up to swimming at the Newington Baths and to excursions to public parks, where tea was provided daily. Thanks to the action of the London County Council in providing a school free of charge, and to assistance in the matter of tram and train fares, the total expenses amounted to only £30. It should be added that the teaching staff—twenty-two in number—gave their services gratuitously. Walworth Holiday School, it will be remembered, is conducted by the Robert Browning Settlement, and the report gives ample evidence of the good work that may be done in schools of this character. It is to be hoped that local authorities generally will take full advantage of the permission afforded them by the new Education Bill to form vacation schools—in large towns especially they will constitute a great boon.

The League of the Empire has issued a scheme for providing students all over the Empire with a graded series of Imperial text-books with the object, not only of furnishing the youth of the Empire with first-hand information, but also of providing, through the financial value of the publications, a fund for the advancement of education throughout the Empire, wherever the books are used. A series of three graduated text-books will be issued on the history and resources of the Empire, and the duties, rights, and privileges of its citizenship, prepared with the co-operation of the different countries of which the Empire is composed. The education departments of the various countries will be offered by the League either: (*a*) stereotype or electrotype plates, free of charge; (*b*) printed copies (at the cost of production only). It is evident that this scheme is of great importance, involving as it does the adoption of the principle of educational co-operation, which has been secured by the cordial support given to the efforts of the League by the various Governments and their education departments. The direction of the work has been undertaken by the history section of the League, the chairman of which is Prof. Bury, who is also the chairman of the editorial committee, while Prof. A. F. Pollard is the editor of the series.

In the *Nineteenth Century* of last February Miss Florence B. Low published an article commenting unfavourably on the reading and general intelligence of the English high-school girl. The League of the Empire, dissenting from so sweeping a verdict, sent out all over the Empire a paper of questions on "What Girls Read." From the immense number of answers received, the conclusion is drawn that Tennyson is the favourite poet of British girls, though Shakespeare ranks first among the purely classic writers. Among novelists, Merriman is perhaps the most popular with British girls, though the early works of Anthony Hope are often mentioned, and the novels of Stanley Weyman and Lytton. Kipling leads among Colonial girls. Excessive magazine reading is shown not to prevail, but a great and intelligent interest is taken in the daily and weekly newspapers. History comes out as the girls' favourite study all over the Empire; while the most popular hobbies are reading, gardening, and collections of various sorts. The reader of the papers regrets that, as Miss Low stated, Mrs. Ewing's works are seldom read. The report directs attention to the careless spelling displayed by many girls in their answers, and concludes: "We may then, on the

whole, take heart of grace in respect to the general culture of our girls."

FROM the results of the annual examination by the Oxford and Cambridge Schools Examination Board we learn that the total number of candidates for higher certificates was 2,054 (of these, 462 girls were candidates for letters only); 958 higher certificates were awarded, and 391 letters were given to girls. The total number of candidates for lower certificates was 1,046, and 570 certificates were awarded.

THE new calendar of the University College Hospital Medical School explains the new arrangements made necessary by the formation of university centres for medical studies in connection with the University of London. The preliminary and intermediate courses will be taken at a university centre, whence the student will pass on to the Hospital Medical School. The Duke of Connaught is to open the new buildings early in November.

THE Board of Education has just issued the annual volume of "Syllabuses and Lists of Apparatus applicable to Schools and Classes other than Elementary from August 1st, 1906, to July 31st, 1907." The volume, which has superseded the Directory of the former Science and Art Department, contains a number of helpful syllabuses of science subjects. We notice that the Board contemplates making certain changes in the examinations in practical plane and solid geometry, mathematics, and applied mechanics, to take effect in 1908. Any such changes will be announced not later than March, 1907.

THE 1906–7 session of Birkbeck College opened on September 26th, when Sir Edward H. Busk gave the inaugural address in the theatre. The college is conducted in close relation with the University of London; courses of study for the university examinations are provided under recognised teachers of the university. These courses extend over thirty-eight weeks. For a fee of £7 10s. a student may take a three terms' day course in four subjects for either the Intermediate Arts or the Final B.A. examination, whilst the fees for similar courses for the B.Sc. examinations are about £10 higher. The college calendar gives details of syllabuses, text-books, scholarships, &c., and the list of successes in the previous session.

A COMPREHENSIVE educational policy is usually adopted at the annual Trade Union Congress; and the congress held at Liverpool early in September was no exception to the rule. The chief planks of the platform upon which the organised workers of this country take their stand in matters of education are as follows:—(1) State maintenance of school children; (2) scientific physical education with medical inspection and records of the physical development of all children attending State schools, and skilled medical attendance for any child requiring same; (3) a national system of education under full popular control, free and secular, from the primary school to the university; (4) secondary and technical education, as an essential part of every child's education, to be secured by such an extension of the scholarship system as will place a maintenance scholarship within the reach of every child, and thus make it possible for all children to be full-time day pupils up to the age of sixteen; (5) the best intellectual and technical training to be provided for the teachers of the children, each educational district to train the number of pupil-teachers demanded by local needs, and for this purpose to establish training colleges, preferably in connection with universities or university cost of such training to be met by adequate the national Exchequer; (6) the cost of educatic by grants from the Imperial Exchequer, and by tion of misappropriated educational endowment

THE Secretary of State for India has given he is prepared to receive applications for otherwise than by examination, of probatior Indian Forest Service. In making these appc will act with the advice of a selection commit dates must have attained the age of eighteen, not have attained the age of twenty-one, years 1st, 1906, but the committee will be empov commend the relaxation of the higher limit in which it may think fit. Candidates mus knowledge of chemistry, physics, and mechanic ledge of botany and German will not be insis Assistant Conservator of Forests draws pay at Rs. 4,200 a year from the date of his reportin in India. In addition to the Indian appoint proposed, at the request of the Secretary of S Colonies, to select one or two probationers fo Department of Ceylon and that of the Fede States. Applications must be made on a prir be obtained from the Secretary, Judicial and Pu ment, India Office, Whitehall, S.W., and to to him not later than Monday, October 8th, 19

MR. JOHN R. AIREY has been appointed he the new secondary school at Morley.

MR. A. R. PRESTWICH, senior mathemat King's College School, Wimbledon, has bee headmaster of Richmond School, Yorkshire.

THE Rev. A. E. Crawley has been appointed of Derby School. For the last two years M has been engaged in research work at Cambrid to that he held assistant-masterships at St. Jo Leatherhead, Lancing College, and Bradfield C

SCOTTISH.

AN important circular has been issued by Education Department directing attention to t ditions for the training of pupil-teachers. Sch ties have still the option of retaining the system or of adopting that for junior studer circular it is pointed out that the general lir for pupil-teachers must conform to those laid new regulations for junior students. System must be kept of the work and progress of p in the art of teaching, as well as in the othe their curriculum. Examinations are to be hel intervals to test their progress, and the wo along with all note-books and corrected exer be preserved for future reference. In future t no formal examination for pupil-teachers at the second year, but at this stage they sho sented for the intermediate certificate in all of their curriculum. When special circumstan necessary, such presentation may be deferred u of the third year. Pupil-teachers at the cl apprenticeship will be admitted as students in t vided they are certified by H.M. inspector as l pleted a satisfactory course of training. For t the inspector may call for the production of th work, note-books, and examination papers, submit the pupil-teacher to further examination, or written.

ight Hon. Thomas Shaw, K.C., M.P., Lord in opening a new school at Langside, took o outline what he, as a private individual, thought the basis of the next Education Bill for Scotland. ol Board system, by reason of its flexibility in d adaptation to circumstances, and because of the ess of the local control that it secured, was suited to a nation that had all along been keenly in education *per se*. In regard to the area of ation, he maintained that if they approved of the c principle of popular control, that could only be ctive and adequate by being local and on the spot. e this effective local control, and the interest wed from it, the best unit of area was the they stuck by the present local government areas; ould prefer to set up a Boundary Commission to ew areas which would preserve effective local nd at the same time have regard to the educa- umstances of each district.

leasing to note that one of the first acts of the Provincial Committee for the Training of Teachers to pass a strong resolution about the inadequacy sent superannuation scheme for Scottish teachers. s an adequate supply of fully-qualified teachers er of urgent national importance, and whereas t Superannuation scheme is such as to discourage nce of suitable candidates to the teaching pro- is Committee is strongly of opinion that there instituted, as early as possible, a scheme that e for teachers, at the time of their compulsory owances reasonably proportional to their salaries ensurate with their services to the State." This oming from a body directly responsible for the f teachers, should have great weight with the nt, and, taken in conjunction with the memorial ottish M.P.'s on the same subject, should lead efinite action during the autumn session.

nce the passing of the Education Act of 1872 eachers have protested against being left to the cies of small school boards, and have pleaded for onable security of tenure in their office. Public s from time to time been shocked by a flagrant f capricious dismissal, and a general cry has a revision of the teachers' conditions of tenure, g has really been done. The glaring injustice ent Gartmore dismissal seems likely to effect s of agitation have failed to do. Mr. Harms- P., with the approval of several of his colleagues, t in a one-clause Bill providing that "teachers he event of dismissal have the right of appeal e Scotch Education Department to the Secretary or Scotland, and that in the event of such an teacher so appealing shall be removable from by or with the consent of the Secretary for Scot- hatever be the fate of this Bill during the over- autumn session, the mere production of the ill serve as a warning to the five member school make them chary of using their powers without

REWS' Provincial Committee for the Training of as decided to set up in Dundee a new training King's students. As Dundee has already a entre in connection with Dundee University e necessity for a separate training college in- building for the purpose, special equipment, and a costly staff is not altogether apparent. The whole policy of the Department in recent years has been directed to increasing and strengthening the university connection of teacher candidates. The erection, therefore, of a new training centre entirely outside the university influence seems a retrograde step that calls for some explanation, both from the Provincial Committee which has made the proposal, and from the Department which has approved it.

On the recommendation of the Edinburgh Provincial Committee, the course of professional training at St. George's Training College has been recognised for session 1906–7 as a centre for graduates preparing to teach in schools giving mainly a primary education. Graduates with honours desirous of securing the special qualification to teach some higher subject in an intermediate or secondary school may also qualify during session 1906–7 by attendance at this college, provided they have fulfilled the other conditions laid down in the new regulations for the training of teachers.

The question of the teaching of Gaelic in Highland schools has come prominently to the front within recent years, and has now almost reached an acute stage. On the one hand, we have the typical Sassenach view that Gaelic is of no use commercially, and that the sooner it is decently buried the better. For many years Highlanders themselves were content to accept this position, and made no effort to preserve their national speech. But, encouraged by the success of their compatriots in Ireland and Wales, a Celtic party has at last arisen in the Highlands whose aim is to make Gaelic the "predominant party" in the schools. For all efforts to preserve a beautiful and sonorous language rarely fitted for the expression of every shade of human passion and sorrow there should be the fullest sympathy. If only the Celtic enthusiasts will confine themselves to the preservation of the Gaelic they will have the support of all lovers of their beautiful land and noble traditions. But they should take care that the fullest opportunity is given for the study of English, which must continue, as heretofore, the official language of the schools. In some districts of the Highlands the teachers who have no Gaelic are being harassed and worried by over-zealous Celts. These would fain give their *congé* to all who cannot lisp their shibboleth, which they regard as the only touchstone of worth and merit.

IRISH.

The report of the Commissioners of National Education in Ireland for the school year 1905–6, just published, is a damning indictment of the action of the Treasury in reference to primary education. They lay it down as absolutely essential that "in order to enable us to deal with the large number of cases that have accumulated in consequence of the practical suspension of grants for the past four years it is necessary that a sum of £100,000 per annum should be placed at our disposal for the next five years, and that after that date a reduced sum, which can be decided upon beforehand, should be voted each year in the estimates." One inspector gives a description of a school in the neighbourhood of Belfast which seems to warrant the intervention of the Society for the Prevention of Cruelty to Children, and this is merely typical. There were 401 children present where there was only accommodation for 209. There were seventy-eight infants in a room 19 ft. by 9½ ft., sixty-four first-standard pupils in a room 14 ft. by 9½ ft. (with only one window which could be

opened), and thirty-three first-standard children in a room 13½ ft. by 10 ft. The congestion was so great that lavatories, cloak-rooms, halls, and passages were utilised for class purposes. The quarrel with the Treasury has been going on for ten years, and Mr. Wyndham diverted the equivalent grant to other purposes. It is satisfactory to note that the increase of children in the schools is continuing, in spite of these drawbacks and in spite of emigration, the average attendance for 1900 being 478,224, for 1903 482,489, for 1904 483,897, and for last year 500,489.

THE new Commissioner of Intermediate Education in succession to the Right Hon. the O'Conor Don, who died this summer, is Dr. B. C. A. Windle, F.R.S., president of Queen's College, Cork, whose experience in Birmingham and the south of Ireland should be of advantage to the Board.

THE rules and programme of the Intermediate Board for 1907, in place of those rejected by the House of Commons in June, appeared at last on August 24th, although the title-page announces that they were sealed on June 19th. There may be some good explanation of this delay of more than two months; but none has been given, and grave inconvenience has been the result of the uncertainty as to what the new rules and programme exactly were going to be. The programme, as a matter of fact, is exactly the same as originally published in May, no objection having been made to it in Parliament. The May rules, to two of which objection was made, are replaced, with two or three minor changes, by the old rules for 1906, which are certainly not so good or satisfactory as those rejected. The changes are: (1) that trigonometry (as far as easy questions on the solution of triangles) is introduced as a Middle Grade subject, and (2) that bookkeeping is prescribed as a subject for the Senior Grade, in addition to the Junior and Middle Grades. The official calendar contains some new dates, and the syllabus for experimental science is included in the same pamphlet.

THE Board appears to be feeling its way toward changes for next year, whereby it will be able to meet the views of Parliament, as well as insist on the standard it wished itself to establish this year. It has sent a circular to all heads of schools asking whether they would approve of two languages being made compulsory on all students in addition to English. It has been semi-officially stated that the policy is to make Latin compulsory for boys and French or German for girls. It is much to be desired that the Board would make a general statement of what its ideas of intermediate education are; this could be done in its official report, and the public would then know on what principles secondary education is being conducted. Unfortunately, while payment by results continues, educational questions will generally be considered by the schools from the point of view of the pecuniary loss or gain.

THE Royal Commission on Trinity College held a formal sitting in London on August 31st and adjourned until October 16th, when it is proposed to meet in Dublin and take oral evidence. Meantime, a keen newspaper correspondence is going on as to the possibility of widening Trinity in such a way as to meet the views of Roman Catholics; while another solution suggested is to found a Roman Catholic college under Dublin University, and to give as a site the Royal Hospital and its grounds. The Cork Corporation has protested in set terms against a Roman Catholic college in Dublin as a complete settlement, and has demanded a university in Cork.

THE results of the intermediate examinations which were held last June appeared early in September. A general summary is as follows:—

	Senior	Middle	Junior	Preparatory
Boys.				
Number examined ...	482	1305	3700	2303
Number passed with honours	192	255	528	—
Number passed without honours	177	590	1819	1331
Total number of passes	369	845	2347	1331
Proportion per cent. of passes	76·5	64·7	63·4	57·8
Girls.				
Number examined ...	210	516	1538	893
Number passed with honours	71	84	142	—
Number passed without honours	87	243	882	486
Total number of passes	158	327	1024	486
Proportion per cent. of passes	75·2	63·4	65·7	54·4

The general percentage is almost exactly the same as in 1903 and 1904, but is considerably lower than last year, when for boys it was 70·4 and for girls 64·8.

WELSH.

THE honours lists for the degree examinations, 1906, of the University of Wales, show a sparing allotment of first-class honours. There are none in Greek, one in Latin, one in English, one in Welsh, three in French, three in German, none in Hebrew, three in history, one in philosophy, one in political science, two in mathematics, three in physics, three in chemistry, none in botany, and physiology, and geology, one in human anatomy. The subjects of the theses of the approved candidates for M.A. degree were: in Greek, *The Structure and Arrangements of the Greek Theatre*; in Latin, *How did Virgil, Horace and Tacitus supply the want of a middle voice in Latin by the use of the so-called Passive* in English, *Books of Character of the Seventeenth Century* in Welsh, *A Collection of the Poems of Sion Tudur*; in history, (1) *The Religious and Social Condition of Wales at the Outbreak of the Glyndwr Movement, with special reference to the attitude of the Clergy, both regular and secular*, and (2) *The Value of Clarendon as a Historian*; in philosophy, *The Relative Effects of Fatigue and Practice, including an Experimental Investigation with reference to certain varieties of mental work.*

A SUMMER school in mining has been held at Cardiff with seventy students in attendance in the mining and metallurgical departments. The progress in developing studies in mining in Glamorganshire has been extraordinary. Before a boy enters the mine he has opportunity to follow up such simple lessons as he has received in the day school by the evening class and technical class. Then the more advanced students who have done well in the examinations are taken on tour, first round South Wales, then in the second year to the North Country or Scotland, finally to the Continent, principally Germany. To complete the opportunities of observation, the summer mining school is held for those willing to sacrifice three weeks' wages.

r holiday to pursue their studies. In 1906, in rnment examinations, four Glamorgan students first-class honours, eight second-class, and sixty-t I. honours. No less than 200 men, now colliery have been in these classes.

Welsh National Eisteddfod, held at Carnarvon, appeal was made by Mr. Percival Greaves to the follow the example of the Irish Folk-song Society. ted out that this society had rescued Irish airs vion, and stated that one of Mr. Plunket Greene's cessful songs was picked up at Harlech from a g organ-grinder. Each language has its own genius. Mr. Greaves suggested that a general society could be formed, or the airs could be locally and be submitted to experts in Welsh th a view to their arrangement in simple forms ls and the less cultivated musicians, and in art accomplished amateur and professional singers. Reichel, who is well known as a lover of music, es ought to look forward to the creation of a school of music. Wales needs two things—the c collection and study of the old national airs deliberate cultivation of instrumental music. He rward to the time when the country would no low a store of vitalising art, so simple yet so to be neglected and unemployed, and when the tunes of the four nations would be familiar by repetition to the pupils of the schools, and would within their walls an atmosphere of healthy and led patriotism.

ECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

German Reader. By D. L. Savory. viii.+108 old.) 1*s.* 6*d.*—The first seventy pages are dis-od work, on sound reform lines; they contain dotes, poems, &c., followed by German questions xt and exercises in applied grammar and word-. There is also a section in which further in grammar are given. So far we have only ut why did Mr. Savory yield to the demands of iceans, and give a vocabulary and sentences for ion? The book is well printed, and the proofs read with the care we expect from Mr. Savory.

Short French Readers. (1) *La Révolution* Edited by D. L. Savory. 6*d.* net. (2) *Contes du sé.* Part II. By Perrault. Edited by G. Heyer Cammartin. (Dent.) 4*d.* net.—These are two umbers of the series we noticed recently. In the Savory selects short passages from Mignet, Lamartine, and connects them with a running ry of his own. There are explanatory notes at n of the page in French, and at intervals there ses to be answered in French. The book is in-students in their fourth year. The second book d-year reader, a continuant of the reader we have oticed.

et la Pléiade, Poésies Choisies. Edited by A. . 45 pp. (Blackie.) 4*d.*—We are glad to have enient selection, which can, of course, contain est-known poems, so limited is the space; other-ight have been desirable to add the works of enth-century lyric poets, especially Louise Labé. The introductions and notes, which are in French, give useful information. The printing, particularly of the poems, is not very careful.

G. Freytag, Die Journalisten. Edited by L. R. Gregor. xv.+231 pp. (Ginn.) 2*s.*—Freytag's famous comedy is familiar as a school text; we have several good editions. Mr. Gregor has done his work carefully; the introduction is perhaps a little scanty, but the text is well printed, the notes are good, and the vocabulary is practically complete.

Classics.

The Latin Hexameter: Hints for Sixth Forms. iii. + 48 pp., interleaved. By S. E. Winbolt. (Blackie.) 2*s.*—Some time since, we reviewed Mr. Winbolt's larger book on the Latin hexameter, an able work, which for the first time, in English at least, analysed types of the verse. This is an abridgment of the larger book arranged for practical work. It does not contain exercises, but hints on the technique of verse, pause, cæsura, the beginning and end of the verse, metrical versions, alliteration and musical quality, and rhythmical structure in general. It is a useful book to put in the hands of young composers.

Latin Syntax. By Rev. S. Tickell. 1–13 pp. (Neuman and Co.) 1*s.* 6*d.*—We have noticed Mr. Tickell's "English Analysis" before; it was a clear, logical, and interesting method of dealing with a dry subject. He now applies his method to Latin. All language is limitative, and when once the technicalities of this system are mastered it will be seen to be clear and persuasive. To anyone who wishes boys to get at the heart of the thing, the book is worth a trial. The system may be applied to any language. We are glad to see that the author is not afraid of calling *Comitia regibus creandis* an ungrammatical phrase, good Latin though it is.

Aids to Latin Translation. By Robert Weir. iv.+73 pp. 1*s.* 9*d.* Text of Passages analysed (in the above). 11 pp. 3*d.* (Oliver and Boyd.)—The aim of this book is stated to be "to help boys to arrive at the literal meaning of a passage by means of careful analysis of the structure of its sentences." A few pages are devoted to Latin syntax; then a passage of Caesar is printed, and analysed after this fashion: "The First sentence ends with *exeant.* The verb [*sic* for main verb] is *conantur*, and the subject *Helvetii.* The subject is not qualified, but the verb is qualified by . . .," and so on. Many men, many minds; some may find this analysis useful, especially illiterate persons working by themselves, but it could hardly find a place in a good school. Most of it would be done easily by a properly taught pupil, and the rest is better done *viva voce* by his master, who knows just how much help the pupil needs.

Arnold's Latin Texts. Edited by A. Evan Bernays. Cornelius Nepos: Miltiades, Themistocles, Lysander, Alcibiades, Iphicrates; Ovid in Exile; both edited by L. D. Wainwright. Ovid, Selections, by George Yeld. Tibullus, Selections, by J. F. Dobson. 63 pp. each. 8*d.*—These books are of the same character as the others we have reviewed. Each contains some thirty-two pages of text and the same of vocabulary. Long vowels (when not in position) are marked throughout in the Nepos and in half the Ovid. In the *Nepos* "the main thread of the more difficult, complex sentences is in heavier type." Nepos is certainly difficult for young pupils. The *Ovid* in truth should prove a useful book, and so should the *Ovid Selections*—which is the only one of the four which is printed clearly, in all the

others the type being crushed up close, so as to try the eyes. The latter book contains some excellent short extracts. We suppose it is of no use to urge again that vocabularies should not be printed with Latin texts after the first Reader has been mastered. We also point out that English summaries of the subject are distinctly bad, especially when carried so far as in the *Tibullus* volume. These books are flimsily bound, and fastened with wire. One of them came to pieces as we opened it. They would not stand a week's wear with the ordinary schoolboy, we fear.

Tales of the Civil War: from the Third Book of Caesar's Civil War. Edited, with historical introduction, notes, maps, vocabularies, and English exercises, by W. D. Lorne. 100 pp. (Clarendon Press.)—The above title fairly describes the contents of the book. The work is made very, very easy, by English summaries to each scrap, by printing each sentence on a separate line (in most of the extracts), by many, many notes. The work is made difficult by the fact that each sentence appears to the eye to be equally important with all the rest, and by the erratic marking of quantities. Sometimes longs and sometimes shorts are marked, sometimes neither; but experience shows that the right system is to mark all the longs for beginners (implying that all the rest are short), and to do this until they are thoroughly familiar with the quantities—for two years, that is, or even more. The notes explain nearly everything. In fact, this is a book of the old type, with all the stock faults of English school-books, and in our opinion quite unsuited for class-work. It is a pity: the subject is good and unhackneyed.

Stories from Greek Tragedy. Retold by H. L. Havell. xxiv.+232 pp.; illustrated. (Harrap.) 1*s.* 6*d.*—It is a difficult thing to turn a drama into a story; even Charles Lamb (we say it with trembling) did not succeed very well, and Mr. Havell is not Charles Lamb. The stories are not bad, but they are a little dull. The mixture of modern narrative and archaic direct speech (see, *e.g.*, p. 109) is disagreeable. The problems of Greek plays, if we except the *Prometheus* and perhaps the *Alcestis*, are unsuited for children, and this book would be useless for any but children. The plays given are: Agamemnon, the Story of Orestes, Antigone, the Death of Hercules, Philoctetes, Medea, Alcestis, Hecuba. There is a short introduction on the Greek Drama and a pronouncing list of proper names.

The Moral Standpoint of Euripides. By W. H. S. Jones. 35 pp. (Blackie.) 2*s.* 6*d.* net.—We wish heartily to recommend this book. Small and unpretending as it is, it contains a vast deal of matter compressed—the student's materials for forming a judgment. Three pages contain ancient authorities for the religious and moral standpoints of Euripides; a short essay of twenty-three pages sums up the author's results (with quotations); the rest consists of a subject index to the poet's works under the following heads: Religion and Providence, Divination, Sanctuary, Immortality, Politics and Society, Friendship, Animals, Family Life, Slavery, the Individual, φύσις ἀνθρωπίνη, φρήν, νοῦς, and Personal Virtue. We cannot discuss Mr. Jones's views in detail, but we may mention the most important point he brings out: that Euripides regarded nature as non-moral and arbitrary, and the mind of man (νοῦς) as the only ruling principle. This is an interesting variation on the dictum of Anaxagoras.

The Euthyphro, Apology, and Crito, with Introductions, Translations, and Notes by F. M. Stawell. xxiv.+168 pp. (Dent.) 2*s.* 6*d.* net.—This is the second volume of Messrs. Dent's "Classical Library," in which translation are printed on opposite pages. We sh preferred the *Phaedo* to the *Euthyphro* as a pend *Apology* and *Crito*; for these three dialogues ha remarkable unity of subject, and are also disting the nobility of their treatment: we have in them style. The style of the translation is not quite it is, in fact, rather dull, nor is it always accur was Hippias of Elea? and why is περιεργάζετ lated, or paraphrased, "guilty" of inquiring? I to say "they were wiser than me"? However, lation will serve to show, what nothing could dis nobility of the greatest soul of antiquity, and w will be useful in spreading the knowledge of hin those who despise antiquity. Whether it will self-satisfied British parent is doubtful; someth than delicate irony is needed for that, and he wil go on as before, careless of his son's training. duction contains the best scene from the *Phaedo* friend the "cock offered to Aesculapius" meets more. We are becoming quite fond of that coc shall miss him sorely, when editors begin to lea did not belong specially to Aesculapius.

English.

A Midsummer Night's Dream. xix.+139 pp. 1*s.* net.—This edition is included in the ' Shakespeare series, and is deserving of praise fo trations no less than for the carefully selecte matter. In classes where preceding volumes of have been already used, this charming edition beautiful play will be doubly welcome.

A Chapter on Essay Writing. By Alfred 31 pp. (Cambridge University Press.) 6*d.*—Thi print of some well-considered hints and maxims tions for good English composition, which are i Mr. West's book on English grammar. In thi form they are handy and deserve a wide circulat

The Sevenfold Gifts. By M. Wolseley-Lewis (Murray.) 2*s.* 6*d.* net.—Manuals for Confirmat dates abound. They all go over the same grou much the same manner, and this is neither worse than the majority of such books. It puts language the usual doctrinal teaching, and may to docile minds.

Pierce the Ploughman's Crede. By W. W xxxii.+73 pp. (Clarendon Press.) 2*s.*—A scholarly edition of a famous work. It has scribed and collated with other texts, and edited and thoroughness. The notes are full, and the well done. In its present form it appears likely the want of a standard edition of this old po fourteenth century.

Scott's Old Mortality. By W. K. Leask. xii (Blackie.) 1*s.* 6*d.*—In its present form this no an excellent reading-book. The editor has taken seriously, and has provided an introduction whic but full and judicious enough within its limitati notes are exactly what are wanted; and a shor printed on the last page completes the volume, w a pleasure to commend.

Chats on Literature with my Children. By Miller. 104 pp. (Relfe.) 1*s.*—A book that is cha

ort of simplicity which appeals to juvenile minds, ight to be useful. The writer ranges over a wide treats the subject most intelligently, keeping the the book well in view throughout. The method is attractive, and should make many friends for t among little people.

Diary of Samuel Pepys. By G. Gregory Smith. o pp. (Macmillan.) 5*s.* 6*d.*—This immortal tainly deserved a place in the excellent "Globe" nd at last it has found it. The handy size of the will commend it to a multitude of readers. The ion is extremely valuable as well as interesting, Smith goes over the ground he attempts to cover t care, and singular fulness of treatment is secured ethod. The remarkable feature of this volume is , which are splendid in all respects, and the index inous. This is no place to discuss the text which r has prepared. The whole volume is worthy of in the "Globe" edition.

booklets on varied subjects are: (1) *Pitman's d Recitations*, Book II., 4*d.*, a delightful little th the brown illustrations *sprinkled* over the pages seen in only one or two books. (2) *Exercises in for Middle Forms*, 1–54 pp. (Relfe), 6*d.*, in which ethod (*i.e.* of printing difficult words with their on one side of the page, and the dictation on the adopted, each piece having its dictionary, so to The method is ingenious; the pieces strike us as ry hard. (3) *Fables for Children.*—A praiseworthy to show to little children the extreme danger of with fire. The booklet (3*d.*) is published by the Fire Prevention Committee, 1, Waterloo Place, ll, an address which should be kept. Out of the e fables, three are written by women. All school- are strongly recommended to obtain a prospectus committee.

mperial Reader. Edited by the Hon. W. P. Reeves E. Speight. 400 pp. (Hodder and Stoughton.) -This book presents a descriptive account of the s forming the British Empire, and our only com- that it contains 400 pages. If the book were one ies of twenty, and each volume were as full as should be still more pleased. Every country is ed by *bona fide* literary extracts from well-known the road to India, *e.g.*, being dealt with in nine tracts, three of which come from the pens of lner, Kinglake, and Mallock. A curious printer's ributes the famous Sphynx chapter to Eastlake. ose the time is far away when a compulsory voyage part of the training of teachers.

ork Readers. Book V. 1–272 pp. (Bell.) 1*s.* 6*d.* readers have been constantly noticed in the pages School World, and always with favour. The opy is an admirable attempt to introduce children ture by widely-chosen selections. That they are true; but in these days of libraries short pieces y be used by teachers to point to the authors them- Marryat and Hauff, Goldsmith and Fenimore Borrow and Miss Mitford, are all represented. this opportunity of once more adding that the t teacher who knows his authors is the brain to be placed at one end of the fishing-rod. teachers will see something in the new society being formed for the study of the teaching of

Shelley's Adonais. 32 pp. 3*d.* net. *Macaulay's Life of Goldsmith.* 32 pp. 3*d.* net. (Horace Marshall.).—More "Carmelite Classics," reproducing all the features of this edition of good texts supplied with a minimum of editorial matter.

Black's Picture Lessons in English. Book I. (Black.) 6*d.*—A brilliantly illustrated and suggestive little book.

We have also received two volumes (1*s.* 6*d.* net each) of the Poems in Blackie's Red Letter *Shakespeare.*

History.

Pioneers of Commerce. 48 pp. (Pitman.) 3*d.* paper, 4*d.* cloth.—A brief account, with plenty of pictures, of some dozen successful careers in the commercial world of last century. One wonders mildly what the morals of such books are, written as they are in the spirit of Smiles's "Self-Help." The most obvious are that it is well to be born with a strong constitution, and about a hundred years ago.

Tales of the Spanish Main. By M. Morris. xx.+357 pp. (Macmillan.) 2*s.* 6*d.*—This book consists of stories of Atlantic and Pacific adventure in the sixteenth and seventeenth centuries. There are two maps and eight other illustrations, an introduction, and a short bibliography. The stories are well told, and will delight the children who can get access to them in their school library and elsewhere.

A Short History of Great Britain. 343 pp. (Blackie.) 2*s.*—This, as the preface and title-page inform us, is an adaptation of Mr. Warner's "Brief Survey of British History," to which have been added drawings of historical details from authentic sources, a series of reproductions in monochrome of famous historical paintings, and many sketch maps. There is also, under the name of "Lessons on Civics," a good account of our present constitutions, imperial and local. The book is a reader, not a formal history; but the method of treatment is exceedingly good, and the pupil will learn thence the essentials of British, *i.e.* English and Scottish, history.

The Story of Exeter. By A. M. Shorto. 185 pp. (Commin, Exeter.) 1*s.* net.—A well-told and well-illustrated little book, intended for Exeter boys and girls. Incidents in English history which can be located in Exeter are set forth chronologically, so that Exeter children can connect them with their knowledge of the city in which they live. For ourselves, who have not that advantage, we were glad to turn to the map in Prof. Freeman's "Exeter," to follow the topography. But at the price, and under the circumstances, we perhaps should not expect this addition. It should be in the hands of all Exeter young people, and indeed of many others.

Britain Long Ago. By E. M. Wilmot-Buxton. xiii.+240 pp. (Harrap.) 1*s.* 6*d.*—In our young days there were two kinds of books, school-books and story-books. The former we had to read, the latter we liked to read, but were obliged to limit our quantity. That distinction is now abolished, it seems, and story-books, if only they are of the right kind, are now school-books. At least, in this book we have, published as a serious school-book, yet without notes, and only a "foreword" of five pages, which of course we skip, some fifty short stories, some of them connected in subject, gathered from old English and Celtic sources; and like the children in the fairy story, where eating and drinking nice things imparted useful information, we have only to read these delightful stories to learn the manners

and customs of those far-off times. And all we can do is to exclaim, Happy twentieth-century children! But what sort of a training is it for serious, humdrum after-life? Of course, there are pictures.

Mathematics.

Chambers's "Thorough" Arithmetics. (Scheme B.) Teacher's Book, No. III. By W. Woodburn. 82 pp. (Chambers.) 9*d.* net.—This is a companion volume to Book III., noticed in The School World, vol. viii., p. 277. Besides answers and exercises in mental arithmetic, additional to the examples in the pupil's book, it contains notes that will sometimes be serviceable to young teachers.

Pitman's "Method" Arithmetics. Part IV. 52 pp. (Pitman and Sons.) Paper, 3*d.*; cloth, 4*d.* Answers to Part V. Cloth, 4*d.* net.—This Part contains applications of compound rules and weights and measures in bills; easy fractions; practice, simple and compound; and easy examples in simple proportion. The exercises are usually simple and sensible; the time given in Example 11, p. 45, would be a little difficult to estimate to the accuracy stated.

A New Shilling Arithmetic. By Charles Pendlebury, assisted by F. E. Robinson. xii.+176+xxxiv. pp. (Bell.) 1*s.* 4*d.* (with answers).—*Junior Arithmetic Examples.* By W. G. Borchardt. viii. + 171 + xl. pp. (Rivingtons.) 1*s.* 6*d.* (with answers).—These two books are, to a large extent, identical with the works by the same authors noticed in The School World, vol. viii., p. 315. The first book contains no treatment of the first four rules, while the second consists of examples and tables only.

Matriculation Graphs. By C. H. French and G. Osborn. 64 pp. (Clive.)—This book for beginners forms an excellent introduction to graphical methods; it is based on the work on graphs by the same authors, but is of a more elementary character. In the graphs of equations of the second and higher degrees the intervals at which the ordinates are calculated might with advantage be taken smaller, especially near the turning-points. The diagrams are but moderately good, and we do not see what good purpose is served by making the axes so heavy; the breadth of these lines will introduce serious error in the solution of equations should the pupil imitate the diagrams in the text.

Algebraic Geometry. A New Treatise on Analytical Conic Sections. By W. M. Baker. ii.+325+xxiii. pp. (Bell.) 6*s.*—The best feature of this book is, we think, the large number of easy examples; many are very simple; there are few, if any, the merit of which consists chiefly in the algebraic skill they demand of the pupil, and several in the various sets have real geometrical interest. Yet the difference between this work and its predecessors in the same field does not seem to us to be so considerable as the author appears to think, and the exposition is not, in our judgment, of any special merit. There is undoubtedly room for a new treatise on analytical conic sections, but the current text-books are, on their own lines, so good, that a new book, to be really worth writing, must strike out a new path.

Elementary Solid Geometry. By Frank Stanton Carey. iii.+116 pp. (Arnold.) 2*s.* 6*d.*—In this book, which appears in a new and enlarged edition, the leading theorems of solid geometry are presented in a simple and interesting way. The introduction of the elements at infinity offers considerable advantages in the way of simplifying proofs and, what is more important, of awakening the interest of the pupil. In addition to the usual the book contains a short chapter on projectio tion, rotation, and shearing, while there is a u on the primitive geometrical forms. Consider is given to the mensuration of the common there is a good collection of examples.

Science and Technology.

Elementary Science, for the Preliminary E (Section A: Chemistry). By H. W. Bausor. (Clive.) 2*s.*—This book has been specially p meet the requirements of the Syllabus in Science (Section A) of the Preliminary Certific ination, which has superseded the former King ship Examination. The subject-matter relati syllabus is preceded by short chapters on th chemical combination, the laws of Charles and atomic theory, chemical equivalents, and valenc priate experiments (141 in number) are described i detail to enable students to obtain a satisfactor knowledge in the short time which is generally The volume successfully meets the requiremer section of the syllabus.

Practical Physics. By W. R. Bower and J 398 pp. (Clive.) 4*s.* 6*d.*—In this volume th have endeavoured, with much success, to compile course of over 260 experiments which meet the re of both elementary and advanced students. C periments, marked by an asterisk, constitut *course*; and students who have limited opportuniti in a well-equipped laboratory are recommend authors to carry out these experiments at hon devote all the time obtained in the laboratory which require more costly apparatus. The manne the subject is treated will not find favour teachers who are devoted to the heuristic me throughout the whole volume, space is liberally the theoretical points involved in the performan experiment. This treatment of the subject seems if the volume is to be of the utmost service who have very limited time, and are preparing portant examination. Novel treatment is evident sections; and it is particularly gratifying to no treatment of weighing *by vibration* (p. 66). It is u that the English composition is occasionally at fa example of this, we may quote the following s 309):—"Hence the currents are inversely prop the lengths of wire in or the resistances of the ci

School Gardening for Little Children. By Latter. xxiv.+167 pp. (Sonnenschein.) 2*s.* Miss Latter's success in the attempt to make na ing the central point of the school life of littl even in the heart of a town, should encoura teachers everywhere to follow her example. In th ing little book they will find a detailed accou methods she has found most successful, set f stimulating enthusiasm. Prof. Patrick Geddes c an interesting introduction on the pedagogics of ment.

A First Course in Practical Botany. By G. Elliot. viii.+344 pp. (Blackie.) 3*s.* 6*d.*—Th divides his course into twenty-five "days'" word day being understood as a portion of tim with good students, has been found to aver three to five hours. The work, therefore, represe venient course for one session. The book differs

ory manual in giving theoretical explanations association with the practical instructions, bundance of illustrations, many of which are ethod of treatment throughout shows the hand nd experienced teacher, and the whole tend- ook is, we think, to encourage the student in vestigation along lines of his own. A large ferences to original authorities has been given, e that students may be encouraged to form e habit of consulting many books." It would hors of scientific text-books followed this prac- . The book is to be cordially recommended.

y of the Frog. By Samuel J. Holmes. ix.+ e Macmillan Co.) 6*s.* 6*d.* net.—Teachers and lents of zoology will extend a hearty welcome , which probably stands alone as a concise present-day knowledge of the structure and the frog. Various reasons have combined frog its unique significance to the biologist uthor remarks, there is perhaps no animal, which has been the subject of so many scien- tions. The method here adopted of consider- al as the theatre, as it were, of the action of the various vital forces has a value which nce for all by Huxley's classical monograph h, for it creates an impression on the imagin- student which probably could not be attained r means. Both as a scientific study of a as a compendium of information for reference, one which cannot fail to be of great value. s style is lucid and convincing, and his lan- cise, and at the same time refreshingly free sary technicalities. The only verbal lapse we is the employment of the term *archenteron*, *esenteron*, for the primitive alimentary canal This is unfortunate, since the distinction wo terms is of considerable importance. The llently illustrated, and abundantly supplied es.

iring. (Fourth Edition.) By W. C. Clinton. rray.) 2*s.*—In the revision of this book an n made to bring it up to date without unduly size. In the sections on arc and glow lamps ts short accounts of the latest practical develop- en given. The volume will prove useful as an o the art of indoor electric wiring; and it can ded to students preparing for the preliminary of the City and Guilds of London Institute t.

Miscellaneous.

st of Schools and Tutors, 1906. 1*s.* 6*d.*— inth edition of a very useful book for parents chool. The schools are classified in a great ays, and it is easily possible to distinguish g chemical laboratories, agricultural depart- l scholarships, and so on. Sensible advice ow to prepare boys for the Army, Navy, and ssions, and a list of scholarships and exhibi- e at the public schools is given. Altogether and useful book of reference.

irl: should they be educated together? By and E. S. Tylee. 1–72 pp. (Simpkin Mar- This little book says almost all that can be r of co-education. It instances America; it he civilising power of the girl; it tells of Keswick and Bedales; and it quotes at length R. L. Stevenson as a convert to co-education. When all is said, many assert that America is beginning to repent; parents who have had children at co-educative schools are very much divided in opinion; and the author of "Catriona" is not yet looked on as a sound educational theorist. We should like to have full authorities for the statement that boys and girls sat at the same desks in Greece and Rome, and read Homer and Hesiod together. It may be a good thing to turn our society topsy-turvy; until this is done co-education will have to fight for its life in England.

Augustus Austen Leigh, Provost of King's College, Cambridge. A Record of College Reform. Edited by W. Austen Leigh. With portraits. xii.+306 pp. (Smith, Elder.) 8*s.* 6*d.* net.—Probably the subject of this memoir would have been the last person to expect such a tribute; and, indeed, we are bound to admit that the interest of his life is private rather than public. The college reform alluded to had to come, and Mr. Austen Leigh carried it through with tact; that is about all that can be said. He was a good man of business with sound judgment, whose opinion was valued in the University; but he was not great, intellectually or otherwise. The chronicle of an uneventful life has to be padded out with a great deal which will only appeal to his family or intimate friends. Kingsmen, however, will no doubt find the book interesting. Assuming the interest, the book is modestly and simply written, and in that respect matches the life of the Provost.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

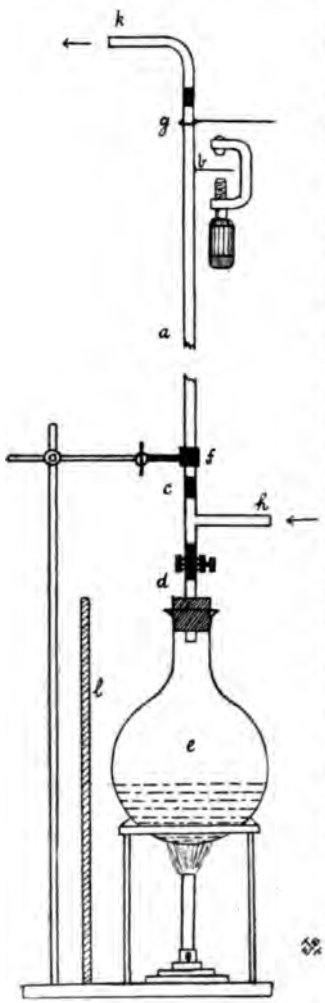
Apparatus for the Determination of the Coefficient of Linear Expansion of a Metal Tube.

The apparatus for this determination may be fitted up quite easily from materials generally in use in a physical or chemical laboratory. As a rule, the determination of a coefficient of linear expansion involves a somewhat costly piece of apparatus, and, moreover, the experience of fitting up is denied the student when he is provided with the finished article. Beyond a few metal tubes, which may be obtained for a few pence, the following method is cheap and simple, and, if performed with the care and precaution which one may reasonably expect from a second-year student, is capable of yielding very fair results.

A long tube *a* of, say, brass, more than a metre long, has a needle soldered (eye end) to it at *b* about two inches from one end. The end of the tube remote from *b* is fitted, by means of a short piece of indiarubber tubing, to the three-way tube at *c*. Continuing down, the three-way tube is fitted, by means of a piece of indiarubber tubing carrying a screw pinch-cock, to the outlet tube *d* of the glass flask (or tin can) *e*, which is used for generating steam. The brass tube is tightly clamped at *f*, and is maintained vertically by a ring of copper wire, clamped to a retort stand, at *g*. A micrometer screw-gauge, reading to the 1/100th of a millimetre, is clamped firmly in position at *b*.

A determination is carried out in the following manner:—Screw up the pinch-cock at *d* until the passage into the flask is completely closed. Connect *h*, by means of rubber

tubing, to a cold-water tap, and turn on the latter until a fairly rapid stream of water passes up the brass tube and out of the exit tube at *k*. (The latter is a piece of glass tubing bent at right angles and attached to the top of the brass tube by means of rubber tubing. It is preferable to have this elbow tube in communication with the sink by means of either glass or rubber tubing.) Take the temperature of the water after it has been passing for a few minutes; this will be the temperature of the brass tube.



Now measure carefully, with a metre rule, the length of the brass tube between the bottom of the needle and the point at which the tube is clamped, and then adjust the micrometer screw-gauge so that the top of the screw just touches the bottom of the needle. There is no difficulty whatever in making this adjustment as long as there is a good light behind the gauge and needle, *e.g.*, a window. Note down the reading of the gauge.

Turn off the cold-water tap, open the pinch-cock at *d*, and place a Bunsen burner under the flask. It is advisable to place a piece of board or other non-conducting material at *l* in order to prevent heat from passing to the retort stand by radiation. For this reason a piece might also be placed on the base of the retort stand as a support for the Bunsen and tripod.

When the water boils steam will pass rapidly up through the brass tube and out by the exit tube at *k*. It will now be seen that the needle has moved away from the top of the screw, due to the vertical expansion of the tube.

After the steam has passed through the tube for some little time, and there is no further expansion, adjust the micrometer screw-gauge so that the top of the screw just touches the bottom of the needle once more, and again take the reading.

The necessary data for the calculation of the coefficient of linear expansion of the tube has now been obtained. The following example is the result of an experiment carried out by a student in the school laboratory :—

Length of brass tube = 1000 mm.
Temperature of cold water = 12·3° C.
,, steam = 99·3° C. (Barometer = 741 mm.)
1st reading of micrometer screw-gauge = 4·18 mm.
2nd ,, ,, ,, = 2·56 mm.

∴ Expansion through 87° C. = 1·62 mm.

Then 1000 mm. of brass tube expand 1·62 mm. th
∴ 1 ,, ,, expands 1·62 ,

$$\frac{1000 \times 87}{} = 0{\cdot}0000186$$

The following tubes, diameter about 2/5ths are suitable for determinations similar to th iron (0·000012), brass (0·000019), copper (0·0 glass (0·0000086). Since the needle cannot be the glass tube, owing to the difference in e glass and steel, a short piece of platinum w fused in to take the place of the needle.

E. T. I
St. Philip's Grammar School, and the Ora Edgbaston, Birmingham.

Latin for London Matriculation.

In your kind notice of the "Matriculation struing Book," by Mr. A. F. Watt and myself, a regret that the introduction leads up, not to standing of a text, but to the "cramming o May I point out that the "snippets" to whi viewer refers are intended as practice in the of a passage apart from its context, and that n be more sorry than we should if the London M candidate were to read no Latin of a less kind?

Latin without Latin literature is much on a "Hamlet" without the Prince, and in "M Selections from Latin Authors" we have ende means of extracts of appreciable length from classic writers, to give learners some idea of th of Latin literature during the century precedin of Augustus.

Nevertheless, the discontinuance of a Latin matriculation, though it was doubtless an unav cession to schoolmasters, is to be regretted; an hoped that eventually examining bodies will se to follow the example of Oxford, and allow c choose their own books within certain limits.

B.
University Correspondence College, Burlingto Cambridge.

I am glad to learn that the editors did not book to be the whole Latin for matriculation, that a statement to this effect has been overlo it is stated that this book should lead up to the lation Selections from Latin Authors," by the s The objection to the one book, however, ap other. Many, perhaps most of those who use will use no others, and will never read a compl any importance. I cordially agree with the hoping that the London Matriculation may s reformed. At present it directly encourages cra

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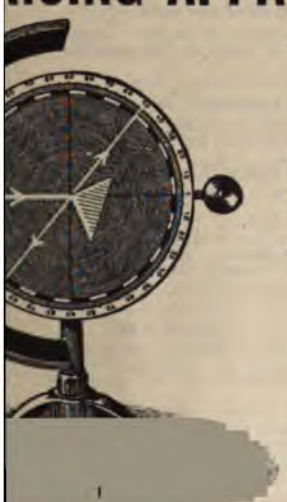

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The School World

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ART OF ORAL QUESTIONING.

By T. RAYMONT, M.A.

ng Department, Goldsmiths' College, S.E.

purpose of the following notes is to deal a strictly practical way with an im- rtant practical point in teaching. The ll remark that we confine ourselves to tioning. A great deal might be said, ps needs to be said, on the art of com- paper of questions for a written exam- ut that is not our present concern.

honoured use of the question-and-answer teaching is exemplified in the familiar catechism. This form of instruction is ustifiable on the ground that if a de- d is to be taught, there are advantages it down in very definite terms. But we d for an intelligent appreciation of those d this means at least that, as a rule, re questions and answers are necessary ar on the printed page.

story of teaching furnishes well-known of the application of the catechetical her subjects than religion. Mangnall's and Joyce's Dialogues are cases in hese little systems have had their day, all practical purposes, have ceased to xplain why would be to anticipate much stance of the following remarks.

ing with the use of questioning in the ass-room, we must begin by drawing an distinction, and the distinction will be best brought out by a consideration ustrative examples, of kinds which fre- ccur in the course of a day's teaching. us suppose that a junior form has , or read, a descriptive account of the Joan of Arc. Such a conversation as ing will perhaps take place subsequently he teacher and certain pupils :—

was there so much fighting in France in reign?

e Henry VI. was called King of France, and were not willing to have him as king.

great city did the English wish to take?

s.

aved the city?

f Arc.

Q. Who was she?

A. A peasant girl in a small French village.

Q. What kind of girl was she?

A. A good girl; a pious girl; a brave girl; a simple girl. (From various pupils.)

Q. What made her think of offering her help?

A. She said she was told to do so by an angel in a dream.

Q. What did her friends do?

A. They laughed at her, and tried to prevent her.

Q. Did Joan give up her plan?

A. No. She determined to see the king, and she did see him.

And so on. At this point we need not pause to inquire into the entire wisdom of the teacher's procedure. We merely observe that this general procedure is quite customary.

Our second example shall be from a lesson in arithmetic. Suppose that some preliminary work in fractions has been done, and that the solution of an easy complex fraction, say $\frac{2}{3}$ of $\frac{1}{5}$, is now proposed. Our imaginary conversation might proceed as follows :—

Q. How many fifths are there in a whole?

A. Five. (Here a straight line might be divided into five equal parts.)

Q. If each fifth were cut into three equal parts, how many parts would there be altogether?

A. Fifteen. (Let this be represented in the diagram by subdivision of the five parts.)

Q. And what part of the whole is each of these smaller parts?

A. A fifteenth.

Q. How much, then, is a third of a fifth?

A. A fifteenth.

Q. How shall we write that down?

A. (*after some hesitation*). $\frac{1}{3}$ of $\frac{1}{5} = \frac{1}{15}$.

Q. Look at the diagram, and tell me how many of the smaller parts make a third of *four*-fifths.

A. Four.

Q. Then what is a third of four-fifths?

A. Four-fifteenths.

Q. How shall we write that down?

A. $\frac{1}{3}$ of $\frac{4}{5} = \frac{4}{15}$. (A pupil does this.)

Q. If *one*-third of four-fifths is four-fifteenths, what will *two*-thirds of four-fifths be?

A. Eight-fifteenths.

Q. How shall we write that down?

A. $\frac{2}{3}$ of $\frac{4}{5} = \frac{8}{15}$.

No experienced teacher will suppose that the

actual lesson would proceed with the smooth regularity suggested above. Little would be gained, however, by the attempt to transfer to print the "by-paths and indirect crooked ways" of the duller pupil. It is enough if we have fairly set down in a general way what would probably take place.

Now let us compare the two examples. In the first, the pupil has been led to recall certain facts, to exercise his memory; in the second, he has been led to think out a new fact on the basis of certain facts previously known, or, as we commonly say, to exercise his intelligence. The first involves the apprehension of facts; the second involves the apprehension of *relations between facts, i.e.*, it involves thinking. In the first, the facts are connected as a temporal series; in the second, they are connected by logical necessity. To question a class by the first method is a comparatively simple matter; to question a class by the second method is a thing that usually requires closer thought and longer practice.

We now see that it would hardly be possible to construct an arithmetical catechism, because the question-and-answer method is here robbed of all its value, unless the answers are of the pupils' own making. We might have a catechism of history, provided we are contented with the bare facts, and provided we do not mind if most of the life and soul is knocked out of the teaching.

Some people have set up a distinction between "fact-subjects," such as history and geography, and "faculty-subjects," such as arithmetic, geometry, grammar, and science; and, on the strength of that distinction, they have committed themselves to rather sweeping propositions regarding the relative educational values of these subjects. The above illustrations are by no means intended to imply acceptance of such a doctrine. Every subject is, of course, a "fact-subject," but every subject is also a "faculty-subject," provided we teach it well, and provided the pupil is ripe for the thinking processes that are involved. We have tried to teach history and geography and literature to children under ten, adopting a lively treatment on the narrative and descriptive level, and avoiding all that is reflective and strictly scientific; and we have largely succeeded. We have also tried to teach arithmetic and grammar to children under ten, *without* avoiding what is strictly scientific; and we have largely failed. We have found out that it is a mistake to begin formal grammar so early, and many of us are beginning to suspect that it is a mistake to begin formal arithmetic so early. We can cause a pupil, by our questions, to think about —to compare and to contrast—the facts brought before him, whether the subject be history or geography or arithmetic, but not, as a rule, when he is only eight or nine years of age. Instead of distinguishing between "fact-subjects" and "faculty-subjects," we ought to distinguish between teaching which does, and teaching which does not, involve on the pupil's part a real effort of thought; and this is an affair of treatment rather than of subject. The second kind o tioning illustrated above is usually enjoye boy of eleven or twelve, but not by children.

Every good teacher occasionally emplo is called Socratic questioning, *i.e.*, he sor frames his questions with the view of sho the pupil's ignorance or carelessness, an doing he is often able to give a valuabl intellectual training.

The following colloquy between Jones teacher will serve as an illustration :—

Teacher. Jones, can you define parallel straight

Jones (*promptly*). Yes, sir. Straight lines whic meet.

T. (*meditatively*). Ah! Straight lines which meet. (Draws on the board two obviously no lines not produced far enough to meet.) Then I these lines are parallel?

J. (*taken aback*). No, sir.

T. But they certainly do not meet.

J. (*rather hurt*). No, sir; but—well, of course, to say even if they are produced ever so far.

T. Well, is that far enough? (Produces the lin as the edge of the board, but in the divergent dir

J. (*somewhat flustered*). No; but they would m produced them the other way.

T. I did what you told me. You really meant they are produced ever so far——?

J. (*relieved*). Both ways.

T. Quite so. How, then, do you define paralle

J. (*triumphantly*). Lines which never meet, eve duced ever so far both ways.

T. H'm. Now suppose these two pencils to lines. (Holds them one over the other in differen Would they ever meet, even if produced ever so ways?

J. (*suspicious of further trouble*). N—no, sir.

T. Then I suppose they must be parallel?

J. (*humbly*). No, sir.

T. What, then, is wrong with your definition?

J. (*dismally*). Indeed, I don't know, sir.

Socrates would probably have been co this point to leave the abashed Jones to thoughts—sadder, and, it is to be hoped, but with no more positive knowledge than The school teacher's purpose would not, h be quite realised. Continuing the conve he asks Jones to hold the two pencils parallel position. Jones, who knows p quite well when he sees them, brightens u obeys with alacrity. After some furthe tioning, the boy suggests, or intelligen quiesces in the suggestion, that the line be in the same plane, and he amends his de accordingly.

Jones has been taken as an example careless, slapdash sort of pupil. If Jones happen to add conceit to carelessness, th sional employment of the Socratic metho help to cure him of both infirmities.

Most of the books on teaching contain a of rules regarding oral questioning, some o certainly savour of pedantry. You are to instance, to avoid questions that admit o

swered by a simple "yes" or "no," because ey encourage guess-work. Sometimes they do t not always, as seems sufficiently obvious from e above dialogue. A teacher ought not to need echanical rules in order to reduce guessing to nall proportions. When, however, a teacher ks a series of questions which require bare onosyllabic assent, his questioning is altogether urious. He might as well put the questions in e form of statements, because they ensure no ort of thought or of memory.

Again, you are sometimes enjoined to avoid iptical questions, *i.e.*, questions which take the rm of requiring the pupil to complete an unished statement. This is another piece of dantry. Elliptical questions are often a conenient mode of teaching, especially when a lesson being rapidly revised. The only warning necesry is that such questions shall not become so merous that their use amounts to an awkward annerism.

Lastly, you are sometimes advised to insist pon answers in complete sentences. If this le were followed implicitly, parts of the above ialogues would have to be revised in this kind f way :—

Q. What great city did the English wish to take?
A. (The English wished to take) Orleans.
Q. Who saved the city?
A. Joan of Arc (saved the city).

It is easy to see that this practice might become intolerable nuisance, because it interferes with e naturalness of the conversation. Answering whole sentences has been recommended on the ound that speaking in sentences, rather than scraps of sentences, gives the scholars better actice in oral composition. This aim is to be mmended, but we should try to realise it in ite a different way. In the history dialogue ven above (from entire approval of which we refully guarded ourselves) the children do not t the best kind of practice in oral composition which, by the way, is the same as saying that ey do not revise their history lesson in the best nd of way. They make detached statements, t the *sequence* of those statements (a most imrtant element in composition) is left entirely to e questioner, *i.e.*, to the teacher. Instead of is, one or two of the scholars should give a ntinuous *résumé* of the lesson. The others ould be on the look-out for omissions and unders, and the teacher's questions would aim ly at keeping the speaker on the right track. this kind of lesson too many questions spoil e teaching.

Accurate recall, clear thought, and adequate pression—these, and nothing less than these, ould be the teacher's aim whenever he questions s class.

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THE USE OF ORAL COMPOSITION IN JUNIOR CLASSES.

By Norman L. Frazer, B.A.
Whitgift School, Croydon.

THERE is no need here to dish up once more the trite reflection that language is primarily the spoken word and that the art of literary expression has been too exclusively claimed for the written letter. The only concern of the present paper is to maintain that sound reason points to oral composition as the most fitting preparation for lucid, agreeable writing, and to suggest suitable methods to those who are disposed to recognise the reasonableness of this proposition.

Language teaching is one and indivisible; the words recall a certain parrot—but parrot-calls are often truisms. In teaching a foreign tongue, teachers have long since agreed that oral work must precede written; the best of them, we are convinced, recognise that the only foundation for written composition is to be found in very careful oral exercises. But in teaching the foreign and the native tongue differences of degree, and to some extent differences of method, are necessarily occasioned by the contrast of an extremely limited and a comparatively large vocabulary, by the total ignorance and the too great knowledge of colloquialisms, and by the slowly acquired and the intuitively possessed acquaintance with idiom.

At first sight it might seem that the possession of such a birthright as one's own tongue rendered the laborious acquirement of its literary use a ludicrous waste of time—only to be compared with some of those extremer devices of some of the newer mathematicians who are accused of taking infinite pains to teach a boy of ten what he will do unconsciously at the age of twelve. But it may be postulated that literary expression is one of the most delicate instruments of the human mind, and that success in its attainment is so rare that the "intuitive" argument must be ruled out of court. Secondary schools now, like everything else, are based upon the widest democratic basis; and, however excellent may be the general result, the teaching of English has certainly not been made easier. For schools but follow the broad tendencies of the people, and it would not appear that there is any sign among us of a care for the higher claims of language. It is, of course, obvious that it is no part of the schools to foster a preciosity of style, but in a country where there is neither a native genius for expression as in France, nor a kind of exotic cultivation as in Scotland, it is essential to devise some means whereby a satisfactory standard may be attained.

The doctrine of interest, at any rate, is on the side of oral composition. The living word almost compels treatment of the known and of the concrete. And it is here that the teacher of English has a great advantage over his colleague who teaches foreign languages. In the last resort and in the very earliest stages the everyday experience of the pupil presents an inexhaustible supply for

lessons in composition. The most trivial commonplaces of life may be presented badly and well. But, it is objected, the formal treatment of the commonplace is essentially artificial. To us, yes; to our pupils, no. Besides, even in the teaching of composition there is a law of development, just as in experience. The summer holidays may afford an excellent literary exercise for the boy of nine, but his brother of thirteen may be better occupied in describing Hereward's resistance in the fens; and they may each be taught to tutor the first impulsiveness of their ideas by means of oral expression. For this is one of the first and greatest difficulties with which we have to contend, that on paper there seems no need to present ideas in a cogent and logical order. But the native instinct of the young narrator is to tell—not write—his story so that the whole is effective, and to that end he must keep his incidents well in hand; he must think, and picture to himself the cogent sequence of things. But even then a graphic story is not necessarily correctly expressed? Bill Adams could tell a graphic story with the best, but he is hardly a model of literary expression. That is true, but had Bill been young and had a form of class-mates hanging on his immortal imaginings and a teacher hard by, sympathetic but watchful, many of his solecisms could have hardly passed unchallenged.

But to return to the class-room. It must be supposed for the purposes of this paper that we have no concern with the very young; we must assume that we are dealing with pupils who have passed through the kindergarten or some equivalent training, and that any methods adopted must be suitable to the lower forms of a normal secondary school. Our immediate object is to find a proper introduction to the difficulties of written composition. This introduction must not be haphazard, but above all things systematic; and although composition should be incidental in so far as it must be kept in view in every department of the curriculum, yet its form and its end must be formal. For the art of composition is not a string of technicalities to be carefully disguised from those who aspire to its practice; grammar or the science of language is in a very different case. Vocabulary and expression may be cultivated better by example than precept. As steps to the supreme end we have to foster a largely increased stock of words, variety, ampler sentences, lucidity, and cogency. The choice of our themes must, as far as possible, be regulated by these requirements; and for this some higher ideal should be sought than familiar surroundings. The furniture of a class-room will never inspire a noble vocabulary, for it cannot inspire a noble thought. We must have something to stir the imagination, a story in fact; but the story must have been visualised by those who are to tell it; they must have had it made interesting to them first. The history lesson, the reading lesson, or the study of a fine picture will provide more than ample material.

But a good deal of work must be done before the content of the boy's min be reduced to the necessary proportion o position. Inessentials must go, outst features must be brought into relief, tl appropriate words must give place to the the description must be introduced satisf and it must end reasonably. By what m this to be done? First of all there must haustive questioning on the subject, an after the mind has sifted the chaff from the a brief plan must be drawn up—not teacher, but by the class. So a double will be gained; each individual will have in the work, and the mere act of summar itself a useful exercise. But it is now tl real difficulties begin—the training in building and in sentence-building; for w be ever on our guard against obscuring th ing for the scaffolding at the same time ensure proper foundations and symmetri sign. Luckily, however, the ground-plan elevation are easily kept distinct, and muc lent language work can be done without im the literary result. Even the mechanic malism required in explaining the use important details as the proper employm meaning of suffixes and prefixes can appea blackboard side by side with the finished of which they seem to be an infinitesimal

But far more difficult than the training i building is the training in sentence-building unrestrained genius of the young compos itself to stringing together principal co-or sentences. And however fascinating may exercise and practice of subordination, it tainly not easy to teach. And yet what it be but fascinating to the pupil to wa own creation gradually assume a beauty dependent on so subtle a process as the necessities of time, reason, and conse There is always, too, the advantage tl desired end is being brought about by th wits of a score of fellow-workers keenly in in the result. But even when some sequence has been acquired there rem delicate questions of felicity of phrase and of construction. The matter of paragraph already been broadly settled by the plan up on the blackboard.

The mention of the paragraph leads further point as to how the fair result i presented to the pupils. Obviously it i sirable that all the rejected strivings after tion should stand recorded on the blackbo it is almost equally undesirable to wait whole narrative has been worked out. To the paragraph—not the sentence—as the composition would seem the happiest solut it affords unity of thought and manageab tent. When paragraph has been added t graph and the work stands as a complete there is every reason why the model sh transcribed. The work has been the pupil and each of them has a claim to regard it own.

l composition, as in most parts of the work, there are, of course, mechanical vith which all of us are familiar. There hich has enjoyed considerable favour in t, and which, discarded from other of language teaching, still obtains in It is a common practice to require correct faulty sentences. What useful ained by this—at any rate in the early f teaching composition—it is extremely say. As an advanced exercise in syntac- eties, no doubt a case can be made out practice; but there it is an adjunct to nce of linguistic criticism—a stage of nent far removed from that we are here ng.

what has been said it appears that the es of oral composition include the co- n of the class, both positively by help d negatively by suggested criticism; the of the teacher as an arbiter of fact and t; the elimination of recorded error; the of a choice of vocabulary; and a training eness of thought. The greatest advan- all, perhaps, is that it is possible for the o secure that the general reading of the ould react directly upon their composition ing a word, a phrase, a construction, an bedded in a setting which has become their experience and now exalted into a of comparison and a criterion of taste. en the most enthusiastic believer in the es of oral composition has to recognise ations. Those limitations are shrewdly t in the title of this paper. Oral com- is invaluable as an introduction to written ion, but there comes a stage when the of the individual is not to be trammelled -operation of the many, when abstraction ersede the concrete, when common treat- uld lead either to artificial rhetoric or ventionality. There are, of course, those l that the preparatory training of oral ion leads naturally and properly to the recognised formal debate. But while it rt of my business to discuss here the f debate as an aid to the class-teaching osition, I may permit myself to express ion that the highest forms of literary ion are essentially different from the f debating, and that little advantage is accrue to either the one or the other from llation of the latter in the class-room. ust it be forgotten that oral composition ar more effectual if continually practised side with written. The preliminary talk plan may often serve as a preparation for n theme, without first obtaining an oral Sometimes it will be most helpful to work nodel orally after a written exercise upon e theme and the same plan. The simple up of the plan after the preliminary talk ne earlier stages produce amazing varie- e discreet oral analysis of an individual's work will lend variety to method.

Finally, it may be of use to name one or two books likely to prove useful to teachers who desire to try for themselves the methods, or rather the broad system, suggested in this paper. For preparatory or very young secondary-school pupils may be recommended Miss Hyde's "Lessons in the Use of English" (Heath) and Miss Kumpster's "English Composition," pt. i. (Norland Press). For middle forms, Gardiner, Kettredge, and Arnold's "Elements of English Composition" will be found useful and suggestive.

SUGGESTIONS FOR A FIRST COURSE OF GEOGRAPHY.

By J. C. Cunningham, B.A.
Roan School for Girls, Greenwich.

I REMEMBER once reading that in a certain Parisian studio the students were wont to divide mankind into two classes: "les gens intelligents—et puis les autres." The former have by this time, I presume, decided what they mean by geography, and with the others I am not here concerned, so that I need not begin this article by defining geography, a task which would indeed be quite beyond my powers. I will, however, quote the following remark of Lieut.-General Strachey, with which I entirely agree:—"I would say generally . . . that there is no subject larger in its scope than geography. It comes into contact with not only every branch of science, but with every portion of history. . . . The fact is that the human race essentially depends upon the earth, on which it has been developed under the influence of its surface and the climate, and . . . the physical features of the different countries of the earth have had most prominent and important effects on all that has happened in the past"—and one might add on all that is happening in the present.

In what follows I am supposing that the children have two geography lessons a week, and one of these, I think, could be usefully given to mapping out their own surroundings. The first thing they have to do is to locate themselves, by observing the position of the sun, and thus getting the four points of the compass, north, east, south, west. They should spend a long time over this, and make various observations, and work numerous exercises in connection with their observations, and in all their outdoor work they should begin by fixing their directions. They should also be encouraged to observe the position of the Pole Star, but they should not be allowed to use the mariner's compass until later in the course. No child should have any geography book nor an atlas, but each should have a fair-size mapping book, ruled with squares on one side and left blank on the other. They should begin by making a plan of the schoolroom to scale, then of a street (if possible of one facing due N. and S. or E. and W.), next of a street with turnings, until they have mapped out as much as is convenient of their own neighbour-

hood. On the blank pages the children should be encouraged to paste pictures or to make drawings of the places represented in the maps on the opposite pages. After they have had sufficient practice in this, each child should have a six-inch ordnance map of the streets near the school, and compare it with her own map, and then go over the ground again with the ordnance map; finally they should each have a one-inch ordnance map of the neighbourhood of the school and study it carefully, observing the public buildings, tramway lines, omnibus routes, open spaces, the kinds of trees, flowers, shrubs, and so on, and all the while they should on their blank pages as often as possible paste in pictures or drawings of the places and things they observe. This should lead them later on to make more extended observations (for instance, the different kinds of flowers and trees which grow on different soils), and when they go for holidays they should be encouraged to use ordnance maps and keep a record of their observations.

When they have had practice in all this they should go over the ground again and notice the difference in levels, and gradually be led to an understanding of the simplest contour lines. The teacher might adopt some such plan as that recommended in the syllabus drawn up for the council of the Royal Geographical Society, and published in 1903, or if the subject is considered too difficult for this stage it could be deferred, but at any rate the children should notice the difference in levels, even if they do not mark it on their maps. They might now, perhaps, be shown a relief map of their district (if one can be obtained), and taught to compare it with their ordnance maps.

Nothing has been said so far of rivers or streams. These always present difficulties, as the most unimpressive streamlet has an inconvenient habit of putting quite a long distance between its source and its mouth. However, if there is any kind of stream in the neighbourhood, the children should be taken as far *up* it and *down* it as possible, and made to observe the direction in which it flows, and afterwards they should follow its course on their ordnance maps, so that they should once for all grasp the fact that water flows from a higher to a lower level. At this stage, perhaps, some simple experimental lessons and exercises might be given in answer to the question: "Where does the water come from?" and these would lead to experimental lessons in physiography in general.

I have supposed that the children have two geography lessons a week; they will also probably have two history and two oral composition lessons, and I would suggest that these, as well as the one remaining geography lesson, be used for what follows. The composition lessons could be used for getting back orally from the children the stories and descriptions which had been given them in their history and geography lessons.

Side by side with the mapping of their own neighbourhood they should learn how other people long ago mapped out their ings, and how at length, in spite of n takes and failures, the whole world ha extent been mapped out. The childr still have no books, but they should mapping books for making drawings ar in pictures. "The earliest known m representing the Plain of Mesopotamia Euphrates flowing through it, and the rounded with two concentric circles named the 'Briny Waters.'" I sh begin with Mesopotamia. I should de direction with regard to the school, i and physical features, and its people, the children had a picture of all this in t I should tell them that the Babylonian accurate maps. I should then show the of the ancient map of Mesopotamia, an was the map they made of their cou then I should let them copy it into their books. Next I should tell them the Abraham and his journey from Cha Egypt, describing Egypt and the through which he travelled. Then the Joseph, and the departure of the Isra

The next people to come upon the the Phœnicians. I should describe thei the building of their first boat, their their colonies, their visit to Britain. were traders, and they made no maps, did they have not been preserved. N the Greeks, with their sunny climate, th tainous land, their blue island-dotte should try to make the children pi country and climate and people, and c with Egypt, and then I should tell story of the Argonauts, the Siege of adventures of Ulysses, and then I sho them Homer's map—the flat shield with surrounding it—and I should tell them what the early Greeks thought the w like, and I should let them copy the their mapping books. Then I should the chief facts in Greek history and R tory, connecting the history and geog gether whenever the one depended on t but just telling the simply human st geographical influences were absent.

The foundation of the Greek colonies the geographical knowledge of the Gr the children should be made to see ho creased knowledge led to a desire to map and write a geography. Anaxim Miletus (sixth century) was the first to With regard to his difficulties (the diff finding the *relative* position of places. on), the children should be told just as they can understand, but at least the be made to feel that he *had* difficultie so they should go on to the time of Era (240 B.C.). By his time scientific men h to the conclusion that the earth was fixed in space at the centre of the unive this point the teacher should have a lar globe, and should mark on it roughly t

aces she has told the children about in tion the discoverers supposed them to be. ratosthenes calculated "that from the of Gibraltar to the East of India was ds of the earth's surface, and remarked it were not that the vast extent of the Sea rendered it impossible, one might sail from the coast of Spain to the coast along the same parallel." The children ach measure the distance on the teacher's nd share Eratosthenes' feelings on the Thus they should go on to the time of of Alexandria (150 A.D.), and Ptolemy's ould be explained to them. The teacher's hould now be a copy of Ptolemy's globe principal places marked on it.

come the Dark Ages when all this geo- al knowledge was lost, and men believed rld was flat, enclosed in a circle, with m in the centre, and Paradise at the top me east. This is shown in the Hereford hich the children should try to copy.

difficulty for travellers at this time, as for the ancients, was that in all their they had to keep close to the shore. ad the sun by day to guide them and the ar by night, but if neither of these was hey had no guide, and hence they could ture far out on an unknown sea. But in ginning of the fourteenth century the 's compass began to be used, and hence- en became bolder, and ventured farther sea. The children should now be shown etised needle, and allowed to experiment and to discover that however they move t it always returns to its first position nts N., and then they should be told the Dante's tutor, who, on a visit to Roger n 1258, had been shown a mariner's com- at had remarked "that no mariner would use it lest he should be thought to be a n." Henceforth the children should use ass in their own out-of-door work.

come the journeys of the Polos (1295), account of these should be given with ption of the places mentioned. The story co Polo's life should be given, his home- and imprisonment, and the banquet scene ed. The whole reads like a fairy-story.

comes the rise and decline of Venice. ldren should have brought home to them that "mediæval Europe depended entirely East for its luxuries and for many of the ries of life." They should be shown, for e, silk and calico and muslin and emeralds ies and topazes, and nutmegs, cinnamon, cloves, frankincense, musk, ginger, r, myrrh, saffron, indigo, dates, and other similar commodities, and they be made to realise the necessity for the n seasoning the salt meat of winter and fish of Lent, and of the scents for counter- the bad odours of the time. Then a de- n of the countries which produce these should be given, and finally the globe should be brought out and these countries shown on it, and the children should find out for themselves the only possible routes by which these very desirable commodities could be brought to Europe. Thus they would see that Alexandria would become the centre of this trade, and that as the Italians had the shortest sea route from Alexandria to Europe the European part of this trade fell into their hands. All this should be learnt by the children very slowly in the course of many lessons and with the help of stories and pictures.

In a similar manner they should learn of the voyages of the Portuguese along the west coast of Africa from the time of Henry the Navigator to the time of Bartholomew Diaz. The erroneous outline of the Roman geographers should be marked on the globe and rubbed out as voyage after voyage demonstrated its inaccuracy. The children, too, should be told that in one of the voyages the sailors brought home what they considered a wonderful story—viz., that they had lost sight of the Pole Star, and had seen instead the Southern Cross. (The children should be shown a picture of this.)

Next should come the story of the invention of printing and the story of the taking of Constantinople by the Turks. As a result of this, Ptolemy's geography was printed at Rome in 1462, and with maps in 1468. Then comes the story of Columbus, and the children should see how Ptolemy's mistaken notions induced Columbus to imagine the journey eastward to India to be much shorter than it really was; then the landing on Watling Island under the impression that it was the mysterious land of Zipanfu or Japan. Then comes the story of Vasco de Gama's voyage round the Cape of Good Hope to Calicut, and its effect on the Venetians and the Sultan of Egypt, who saw their trade ruined. "When this news reached Venice the whole city felt it greatly and remained stupefied, and the wisest held it as the worst news that had ever arrived." Then come the further voyages of the Portuguese, until by 1521 they had possession of the Spice Islands and the monopoly of the trade in their hands. Finally the voyages of Magellan and Amerigo Vespucci.

The children should now have the outlines of the countries as far as they have been discovered accurately drawn on the globe, and they should now be allowed to use the maps in their atlases.

In a short article of this kind it is impossible to do more than indicate very briefly and imperfectly the course of events, but my idea has been to let the children follow the path of the discoverers, until the fifteenth and sixteenth centuries, incidentally learning the main facts of history, in the belief that if some such plan were followed the children would quite early in their career have grasped two important facts—viz., that the earth is a globe, and that this has had important effects on the history of mankind; and secondly that maps are not meaningless diagrams filled with hard names, but that they

represent the work of generations of brave men who faced dangers unflinchingly, endured toil willingly, and met death with calmness.

Books for the teacher's use:—"The Story of the World," by M. B. Synge; "The Story of Geographical Discovery," by Joseph Jacobs; "A Physical, Political, and Descriptive Geography," by Keith Johnston; Reclus' "Géographie Universelle"; "An Introduction to Practical Geography," by A. T. Simmons and Hugh Richardson.

THE FORMATION AND USE OF SCHOOL GARDENS.

By M. SUNDERLAND-TAYLOR, M.A.
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GARDENING, when carried on with a definite educational purpose, becomes a really important item in the school curriculum. It is to be hoped that it will develop and encourage a love of gardening for its own sake, and thus provide boys and girls with one of the most delightful of hobbies; but it should do much more than this. It necessitates a certain amount of manual skill and handicraft; it affords a valuable artistic training in the grouping of flowers to children who may have but little talent for drawing and painting; it gives an opportunity for real scientific work in the carrying out of definite experiments on pollination, the relative values of soils, and the like; and here nature-study may be carried on in a natural way, for the young gardener is compelled to study weather and the seasons, the interdependence of animal and vegetable life, and to learn to discriminate between friend and foe in the garden. Moreover, without any didactic effort on the teacher's part, the child learns moral lessons of the utmost value in the inevitable sequence of cause and effect. In gardening, any neglect or carelessness has generally to be paid for at once, and very heavily, since Nature gives no second chances.

The scope afforded to the teacher must necessarily largely depend upon (i) the area of ground available, (ii) whether gardening is a recognised subject in the curriculum, and is carried on at definite times under his supervision, or whether it is a voluntary pursuit which he can influence only indirectly and at odd times.

At the worst, the school gardens are little plots in a narrow border along one side of a gravel playground—but even these are not to be despised—while under more favourable conditions the plots are as large as the young gardener can thoroughly well manage, and there are, moreover, beds other than the individual plots. It is a great advantage in every way if there are large beds elsewhere in the school grounds, as these afford an opportunity for grouping on a wider scale, and the possibility of real artistic effects difficult to achieve in the small plot. Here, too, the children can learn somewhat of the arrangement and forethought necessary to ensure a really successful and continuously flowering herbaceous border. Where the gardening is under vision it has been found a good plan t different forms responsible for the varic beds and borders, and perhaps to award annually to the form whose bed has bee frequently adjudged the best in the mon spection.

If the grounds of the school are extensi there is any choice of site for the small is worth while to call in expert opinion an all-important matter. More frequentl ever, the science master has no choice, merely given the chance of a small are school playground of which to make t educational use that he can.

Where space permits, it is most desira there should be about seventeen small p natural order beds—Ranunculaceæ, Cr Caryophyllaceæ, Leguminosæ, Rosacea belliferæ, Compositæ, Primulaceæ, Borag Scrophulariaceæ, Labiatæ, Caprifoliacea cineæ, Liliaceæ, Iridaceæ, Gramineæ—sh be represented.

If there is a shady corner in the play that may be used for ferns, and some habitat for marshy plants is necessary. impossible to get a concrete-lined tank, be found that a zinc bath sunk in the soil the purpose fairly well. There is ofte little difficulty in imitating natural co successfully, but this may often be ov For instance, a bucketful of lime dug corner of the required plot will amelio conditions to which the transplanted cha has to accommodate itself.

Every field club ramble should resul number of roots of common wild plants f beds, and in the holidays, when the s scattered far and wide, plants unknown school district may be collected and broug in damp moss for planting. Perhaps it i necessary to add here that the uprooting wild flowers should be sternly prohibited, a it should be agreed that those rare plant cannot be grown from seeds or cuttings s find a place in the natural order beds. three individuals should be responsible care of each bed. If so much space really be secured, then something may still b with a single plot, in which two or three representatives of the different orders r grown. This "wild-flower garden" will valuable material for the botany lessons, flowers themselves, the dispersal of seed so on, may be studied on it.

The next consideration for the teacher amount of space to be given up to experi plots, as it is here that the most valuable st training in connection with the school g will be done. Definite sets of experimen be carried out to investigate some such pr as the following:—

I. The value of different soils and manu

[1] For valuable suggestions, see "Nature-Teaching," by V Freeman. (John Murray.)

The pollination of wind and insect-fertilised
eistogamous flowers.
Simple experiments in variation.
Investigation of the climbing organs of
nt plants.
Growth which results in "stopped" and
stopped" plants.
Effects of sowing seeds at different depths,
thinning out and leaving the seedlings un-
d.
Effect of growing the same crop continu-
without manuring the ground.
. Some study of plant diseases.[1]
se bare suggestions might be amplified to
tent did space permit, but the intelligent
will realise that the great object of the
nental plots is to make a pupil determined
estigate some problem which is the out-
f his own observation, and not at all that
cher shall propound random conundrums
h he is obliged to manufacture an answer
me to time.
h interest may also be aroused if a small
ground, carefully cleaned and raked over,
for a year in order that the spontaneous
of weeds may be studied, and faithfully
d in the garden log-book.
often convenient to have a plot in which
e given demonstrations of ordinary gar-
operations such as grafting, budding,
g, pruning, good and bad methods of sow-
ds, watering, syringing, &c.
or more compost-heaps should be kept in
out-of-the-way corner, if possible, where
ut from the lawns, dead leaves, and twigs,
ble manure may be allowed to decay. The
should be kept damp, and may be covered
ith soil to prevent disagreeable smells.
provement in the results obtained when
aterial is used in the garden will readily
e the children of the necessity for veget-
atter in the soil.
important matter left for consideration is
all plot. There should be one for each
this is at all possible; if not, two or three
hare a garden, though this plan has many
disadvantages. The plots should not be
an six feet by three feet, and each should
urely divided off by some inconspicuous
oloured tiles, as these may be buried to
depth that they can hardly be displaced.
a foot wide should be left between the
and they may be covered with cinders
is too expensive.
question of a sufficiently good soil is almost
a problem, and here the teacher who is
at his pupils shall have a fair chance will
very effort to secure a tolerable depth of
Bricks cannot be made without straw,
o or three inches of soil laid down on a
tum of rubbish is a very depressing
for the young gardener to work in.
er funds there are had better be sacrificed
at first to ensure a depth of from one and a half to two feet of soil, and every plot should be thoroughly well dug over and manured by a man before being handed over to the children.

The garden tools are another highly important consideration, and here it is the truest economy to buy small sizes of the proper makes, and on no account to be tempted by inviting-looking, but generally worthless, sets of tools for children's or ladies' use. The necessary tools are trowel, handfork, small hoe (*i.e.*, onion hoe), Dutch hoe, rake, spade, digging-fork, watering-can (of zinc, *not* tin), syringe, and basket for rubbish. The first mentioned on the list are those of which the greatest number are required.

Probably the cheapest arrangement for a tool-shed is to adapt a portable bicycle or poultry house,[1] but a packing-case made waterproof with tarred felting and padlocked answers the purpose.

In the management of school gardens nothing is of more vital importance than regulations sufficiently stringent to ensure that every tool taken out shall be returned to its proper place by the person who took it out, and returned *clean*.

The amount of help which the teacher gives must be largely decided by circumstance, but in any case the young gardener should have a great deal of freedom in the choice, arrangement, and treatment of his plants, and must necessarily buy much of his experience through failure.

It is of the greatest importance, however, that every boy or girl should have some definite scheme in mind for the year's gardening. In the winter months, when little can be done out of doors, children should be encouraged to browse on the best florists' catalogues, to handle good illustrations of garden plants, and views of beautiful gardens, as by this means ambition is fired, and they soon have the desire to grow a great variety of plants. Each child should draw up an outline sketch of the work he proposes to do each month (*e.g.*, the bulbs to be planted in October, the seedlings that should be ready for planting out in May, &c.). Also, the young gardener should add to his scheme a list of the flowers he expects to have in bloom every month. This plan prevents that haphazard kind of gardening in which the child buys a red daisy root one day because he sees them displayed cheap on a coster's barrow, and a fern the next week for no better reason. It is not intended that the scheme should be rigidly adhered to if an improvement suggests itself, but it is highly desirable that the gardening shall not depend on the whim of the moment.

Every child should keep a garden diary, and should enter faithful records of the dates when seeds were sown, bulbs planted, and cuttings made, when each plant came into bloom, the length of the flowering period, &c. This kind of systematic record induces orderliness and accuracy, and is useful for reference.

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[1] See the publications issued by the Board of Agriculture.

[1] For this and other valuable suggestions I am indebted to Miss M. Agar, formerly Gardening Mistress at Wycombe Abbey School.

Moreover, carefully-balanced accounts should be kept by every child of the money spent on the garden throughout the whole year, and at the end of the summer term all these accounts should be discussed and criticised by the teacher and the garden club together, with the view of achieving the best results with the least possible expenditure of money.

Whether gardening is taught as a school subject or not, the teacher will probably find it a good plan to inspect the gardens once a month, and criticise the appearance of the plants, number of plants in bloom, cleanliness of the soil, and general tidiness of the plot. If a garden prize be awarded annually, marks may be given after each inspection, and the prize may be given on these, or the prize may go to the child whose garden is the best at the time of judging, provided that it has never fallen below a certain percentage throughout the year.

Where the plots are very small and the conditions generally unfavourable, the teacher will naturally find it hard work to awaken and keep alive much enthusiasm, and the tiny plots may show a great sameness. Then it may be suggested that individual children should grow flowers of one colour only, by way of change, that there should be blue or yellow gardens, for instance; or that they should agree not to grow any of the same plants as in the former year (with the exception of established perennials), or climbing plants only—anything, in fact, to prevent the gardening from becoming dull and monotonous.

It will probably be found that an annual flower show will produce a good deal of keenness, and plants can be grown from seed in the class-room, in window-boxes, or at home, even by those children who do not own a school garden. Seedling oak, beech, orange, date, cherry, and other trees form interesting exhibits, and may be shown year after year with the record of growth in each year.

Another useful stimulus is the circulation of some trustworthy gardening magazine, and the children should be taken to visit big gardens as often as possible. Near London this is a simple matter, as expeditions to Kew, the Botanical Gardens, Hampton Court, and others are easily arranged, but in some provincial towns these visits are more difficult to manage. As a rule, however, the owners of beautiful private gardens in a neighbourhood readily grant permission to a small school-party, under proper supervision, to go over the grounds.

The educational value of the school garden in providing material for nature-study lessons cannot be overrated, but can merely be glanced at here. Where the lessons have to be given in the class-room it is by no means easy to keep the seasonal aspect sufficiently prominent, or to make the children feel the interdependence of plant and animal life; but where there is a school garden into which the class can be taken, the skilful teacher will connect the work of the earthworm, for instance, and that of insect to the flowers in a vital way with the s plant-life. Then, again, weather records of practical utility to the young gardene so many operations must entirely dep weather conditions; friends and foes am birds and the common insect-pests forc selves on his notice; while frogs and toads wood-lice, beetles, ants, and spiders ar webs are all to be found and studied under conditions.

In conclusion, I can only urge the teac looks round his gravel playground in a tow sphere with considerable misgivings as to gardening under such conditions can h educational value, to try the experiment— probably be surprised at the results achi the children.

THE TEACHING OF VULGA FRACTIONS.

By L. W. WILSDEN, M.A.

I.

IT is long now since I began to learn fractions, yet the time is still firm in my mind as one of those poi marked a branching of the ways in m metical progress. As a result of my thou the subject then, and now, the present p the teaching of vulgar fractions has been

I may speak treason in saying so, but to me that, so far as the four simple r not much permanent harm is done by in teaching. That is to say, boys ma these rules in a purely mechanical way injury, so long as they are given plenty portunity of applying them in the solu the problems that naturally arise in the of everyday life. It might be better for learn in a kindergarten to sort their sti bundles of ten, and to talk of one or more and so to become gradually familiaris the principles of the decimal notation. B tically, in spite of all that has been s written on the subject, the majority of b come to a preparatory school have not pr been taught by people with any considera of principles, and so, as a matter of fa generally learnt what they have learnt ra intelligently; and yet, as I say, I question such unintelligent learning of the four rules much matters, so long as the rules telligently applied to the solution of problems, and the mere mechanical worki figures is not held up as an end in itself.

But, by whatever ways they may travel the first stages, all learners stand togethe when they near the land of fractions, ar the road forks more decidedly than ever and the sign-post that marks the partin with one arm towards Figures and Fo the other to Facts and Understanding.

Even the most perfunctory of teacher

r first lesson on fractions by cutting a piece paper into segments, or by doing some kind of lk demonstration on the blackboard; but this ial dallying with the concrete is often also last, and after this first lesson actual fractions entirely replaced by symbols, and the real s are overlaid and smothered by a countless cession of mere arithmetical operations.

oys will not and cannot learn soundly under ching of this kind. Such a single demonstra- will with them prove quite ineffective. Under- g concrete facts need to be again and again before them in varying connections of many erent kinds before those facts become recog- ed as the really important basis on which the mportant superstructure of mere figure work been erected. A fraction is not, as has often n vainly held, one figure over another with ine between, but an actual fragment broken from some given concrete whole, which frag- nt is for the sake of brevity represented on er by the afore-mentioned figures with the between. On this one fact are founded all se operations which we perform, using figures means to further our ends, to discover the le and results of various combinations of con- te fractions. Unless this fact of the actual creteness of fractions together with their sical aspects and appearances, when compared h the wholes of which they are parts, or with r fractions, becomes vividly realised, learners continue to spend or misspend longer or rter periods of wandering in the misty land have spoken of above.

he main difficulty, from the teacher's point of , is that, whereas in taking a very small class not more than half-a-dozen boys it is pos- to do all the concrete demonstration and ving required, yet once the class attains nor- dimensions it is quite out of the question to vide, with any practicable expenditure of gy, a sufficiency of concrete problems for tion, and the teacher is driven to a use of erical examples to a much greater extent than lesirable. It is because the solution of this culty which we offer below seems at once sfactory and practical that the present paper eing written, for the experience gained by writer may prove useful and suggestive to rs, and may obviate some waste of time both teachers and taught.

or the purpose of showing visible and actual tions, we might take a board and, after mark- it out into some definite number of equal ts, saw it through at one of the dividing s; or we might take an actual cake and cut into a number of equal slices. In this way could exhibit a certain number of actual frac- ns of actual things, but such fractions would be readily available on all occasions, while y would certainly be cumbersome, and possibly ccurate. We cannot, then, use, except very aringly, actual things cut into actual parts, d we must therefore fall back on representa- ns of actual things, which, although only re- presentations, will give to the eye an accurate idea of the real things. For teaching purposes these representations must be in sets, so many of a kind, and each one of a kind must be divided into a number of equal parts differing from the numbers into which all the others are divided. Thus, if we have twelve representations of a kind, they may be divided severally into from two to thirteen parts. If in each case some means be taken for visibly marking some given number of parts, each separate shape or representation will show two fractions of the whole, the marked and the unmarked portions. Should the shapes be reversible, each set of twelve will be capable of showing concretely and visibly upwards of forty separate fractions. By employing four sets of shapes the number of demonstrable fractions will be increased to upwards of one hundred and fifty, and this number will fully meet all school requirements. The selection of suitable objects for representation is a matter for individual taste and ingenuity. Here I will only give an account of the four sets that I have myself devised.

1. PLANKS. Take some large sheets of stiff cardboard, and paste upon both sides of each sheet lengths of that species of cheap wall-paper which is designed to imitate match-boarding. When the whole is dry, cut into strips at the joints of the boarding. In this way twelve strips each representing a plank may be formed. Next divide the planks, by thick black ink lines drawn accurately across their surfaces, each into some particular number of equal parts from two to thirteen. Then dilute some ink with water till it is a pale grey, and with this mixture wash over on each plank some exact fraction of the whole, two-fifths, or four-sevenths, or whatever it may be. Each plank should be divided on each side into the same number of parts, and a different fraction should be washed over on each side.

2. BUNS. Cut twelve discs of cardboard each twelve inches across; colour roughly (umber and burnt sienna) to imitate buns. Divide by thick lines drawn in ink from the centre to the circumference into equal parts varying in number from two to thirteen, as before. Wash over a particular fraction of each side of each disc with the grey mixture, but let the fractions be, as far as possible, different from those washed over in the case of the planks; *e.g.*, if the "plank" has one-seventh and two-sevenths darkened, darken three-sevenths and five-sevenths in the case of the "buns."

3. GLASS JUGS. Draw a rectangle, ten by five inches, on a sheet of white cardboard, and on to one side of this draw a simple jug-handle. The whole will adequately represent a glass jug. Cut this jug out, and from it make eleven similar jugs. Divide these transversely into varying numbers of equal parts by ink lines as before, and with the grey wash, applied discreetly, indicate in each case liquid contents rising to some one of the division lines.

4. SLABS OF CHOCOLATE. Cut rectangles of cardboard not less than twelve inches long, in the

same proportions as a stick of chocolate. Colour with umber, and divide by lines both transverse and vertical into varying numbers of equal parts. Wash over with ink certain fractions of each. The division by lines crossing one another will enable the slabs to be conveniently divided into more divisions than was the case with the planks, the buns, or the jugs; in this way an entirely fresh set of fractions will be given. If there is sufficient skill to make the dividing lines resemble the V-shaped depressions that usually traverse the surface of chocolate slabs, so much the better.

From these four sets of shapes all the problems necessary for a course of lessons on vulgar fractions can easily be provided. The reason for having different sets of shapes is that the essential idea of equal divisions is better enforced when the divisions are not always made in the same way.

The account of our apparatus is now complete; in a second article I shall try to give in a compressed form an outline of the processes by which a knowledge of vulgar fractions may be naturally imparted, together with examples and problems which will show how the shapes described above can be used in practice. This article may, however, be fitly concluded with a brief account of the principles which will be our guide in actual teaching.

We shall endeavour so to advance that we may cultivate and strengthen in the taught an attitude of mind which will lead them to look on a question in arithmetic not as a "sum" to be mechanically worked, but as a problem to be intelligently solved. We shall endeavour to do this by using throughout the processes proper to discovery. We shall not begin by saying, "Now, I am going to teach you fractions," but we will start with some problem in ordinary life which will necessitate the use of fractions. We shall then examine the nature of fractions, and consider the various means of expressing them and dealing with them, leading on naturally from step to step, first in each case showing the necessity or convenience of having means to attain certain ends, and then going on to discover those means. In fact, we shall try to make our lessons a running commentary on the old saw which affirms that necessity is the mother of invention.

SOME IMPRESSIONS OF NORWEGIAN GIRLS' SCHOOLS.

By WINIFRED A. TODHUNTER,
Gilchrist Travelling Student.

NORWAY is a poor country—so poor that, in spite of strong patriotic feeling, one-half of her population has been forced to seek better conditions in the New World. A merely cursory glance at the soil will convince the stranger that it needs more than ordinary courage to face agricultural conditions there. It is no uncommon thing to see huge boulders and piles of rock and stone which have been "picked" from the farm land by the hardy Norseman in his fight with Nature. Yet, in spite poverty and her climate, Norway has t for herself an educational system which of the finest in the world. Neither the lon winter nor "chill penury" froze the current of the soul of such as Nansen, and Grieg, and whether or no genius is pressed mediocrity," certain it is that t agree in their testimony that the general s of culture in Norway is high. Ask a sixte old boy or girl your way in the st Christiania, speaking German or Engli you will generally get an intelligent ar the same language. Or get into conversat a shrewd Toten peasant, and he will better understanding of universal histc your English farmer of the elements of national history.

There are certain points which are to the Norwegian educational system. first place, children are not obliged t school before the age of seven, and sc "back to Plato." No doubt this is part the severity of the Norwegian winter, an be remembered that no Norwegian town enough to make street life so undesi young children as it is in London or But also the traditions of the race insist c parental control, coupled with a realis parental responsibility, and there is a r jection to the kindergarten system an people. Another peculiarity arises from tensely democratic feeling of the people are literally no classes in Norway, and the rich merchant of Christiania is poo ing to English standards, yet, on the oth there is none of that degrading and br poverty which we see in our own larg One result of the democratic outlook is t is no overlapping in the educational In the country and in the smaller town only one school, which poor and rich Even where there are higher class private as in Christiania, the preparatory classes are on exactly the same lines as in the el schools, so that up to the age of twel child has had the same elementary educa it is on this basis that further instruction

In the country girls and boys are together, both taking four hours a we nastics and manual work. The upper s of the elementary school form a secondar rather approximating to our new county than to the German Mittelschule or high school, and in some cases correspondin French lycée or our high school. In Ch there are three great co-education school drale School, Borger og Realskole, pu Fru Nielsen's, private); but in general and girls are taught separately. As a Christiania girl spends the first four school life at one of the magnificent schools of the town. The buildings are That in Lakkegaden, *e.g.*, is a f sumptuous building than the royal palace

with everything necessary, including a
's room, and bathing and dining saloons.
ats in the playgrounds are allowed, and we
ked an electric clock which automatically
bells all over the building at stated times,
s checked by an electric button on the
pal's desk.

the age of twelve, girls pass on to the
unal or the private school. Most of the
dary schools in Christiania are private, and
efined by the Act of 1896, which stated
he secondary school should consist of two
tments, Middelskole (age twelve to fifteen
, and Gymnasium, consisting of a three
course, leading to the university. The
e schools are, of course, outside State
)l, but the curriculum is modelled to meet
State leaving examination (Middelskole
en). The Middelskole examination is taken
teen years old, and consists, for girls, of
n and oral tests in Norwegian, German,
sh, mathematics; and of an oral examination
in history, geography, science (including
's, botany, zoology, physiology), and re-
, with further tests in gymnastics and
work. Norway has followed the example
ance in "feminising" education—classics
been dropped, modern culture is the key-
of the curriculum for girls. In one large
dary school in Christiania the girls get ten
a week modern languages, three hours
y, two hours religion, two science and geo-
y, two drawing, one singing, and four hours
astics.

modern-language teaching is on ultra-
n lines. The teachers are Norwegian, but
early stages the lessons are entirely con-
ional. Later the children read an extract
glish or German, and are questioned and
r in the language read, finally orally re-
cing the subject matter. The English ex-
tion for Middelskole consists of the repro-
n in writing by the candidates of some 400
)f English prose, which is twice read by the
ner. A subsequent oral test is in reading
translation from the mother tongue, all
ons being given and answered in English.
German examination, on the contrary, con-
of a piece of translation into German, as
roduction the candidates would slip gram-
al difficulties.

tory is also well taught. After an ele-
ry stage of biography and an outline of
al history, a good general knowledge of
sal history is given. The writer saw a
girl of fourteen called out by the teacher
ubjected to a fire of questions by her class-
From Pericles to Pitt, from Newton to
n, from the Reformation to the French Re-
on she held her own, and baffled the occa-
probing questions of the teacher, till she
down on the date of the execution of
es!

other subjects in the curriculum do not
or much comment. The teaching of the mother tongue is complicated by the vexed question of Danish or pure Norsk (Landsmaal or Bogmaal). The children have not, apparently, the literary taste which is both inborn and inbred in the French child.

Attached to every secondary girls' school is a cookery department, and there are technical schools in which girls learn household management and the peculiarly Norsk woodwork and weaving. As has been mentioned, needlework must be passed in the leaving examination; for the 1906 examination the candidates had to knit the heel of a stocking and work a patch. It will be seen that the Norwegian girl does not escape the everyday duties for which our high-school girls have, as a rule, neither time nor training. Nor does she neglect sport. She will do and dare anything on "ski" or "sledge," and has been known to excel in our own English tennis.

It is not suggested that these golden-haired, pink-and-white Vikings' daughters are perfect, but they compare favourably, in many respects, with their compeers in other lands. Their sportsmanlike courage in school and in the "world outside" lifts them head and shoulders above the French *jeunes filles* of to-day. Their intellectual freedom saves them from the "stodginess" of the budding German *Hausfrau*. And their American downrightness (so well expressed in their own word *ligefremhed*), together with a certain readiness to dispense with conventions, might well be imitated by the otherwise incomparable English maiden.

SECONDARY EDUCATION IN ESSEX.

THE report just issued by Prof. Sadler, of his survey of Secondary and Higher Education in the County of Essex,[1] is, we venture to think, not only a mark of the practical wisdom which the Essex Education Committee is exercising in its dealing with the most important matter entrusted to local authorities for many years, certainly since the burden of poor law administration was laid upon them; but a standing memorial of the educational work which this most distinguished scholar and administrator has been doing of recent years. It was unfortunate that Prof. Sadler's other engagements prevented the survey from being made before the summer of 1905; and that a variety of causes has delayed the publication of the report until twelve months after the survey was complete. It cannot, therefore, be regarded as submitting a policy to the committee; but we feel that it is to be of immense value in enabling them to carry out the policy already adopted, and in creating interest and enthusiasm in secondary education amongst men and women in the county, who are watching with some eagerness the action of those to whom the work of administration has been entrusted. For this reason we regret that the report has not been printed in a cheaper form, although its dis-

[1] County Offices, Chelmsford. Price 5s.

tribution amongst members of local advisory committees of itself brings it under the notice of people in all parts of the county. We think also that its hints at the manner of working of the Essex Education Committee will be of value to local authorities in other parts of the country.

Essex is a county *sui generis*. It contains the most rapidly growing urban areas in the metropolis, a great industrial population on the banks of the Thames, a large number of ancient market towns, of vigorous manufacturing centres, of residential and seaside resorts; with a considerable population of fishermen and sailors, and one of the most bucolic districts in England. Prof. Sadler is right in asserting that no county in England "is more typical of the diversity of English life."

The county has been divided for administrative purposes into eighteen districts, each controlled by a local advisory sub-committee, nominated by the Council, and so representative of the best educational experience in each area. These centres were severally visited by Prof. Sadler, and after an exact description of their educational history and needs, he presents in his report a summary in every case of the course of development which he recommends. The county is studded with ancient grammar schools. Of these the most widely known is Felsted, which has, indeed, so far assumed a non-local character as to be left almost outside the consideration of the county. It is interesting, however, to observe that one of the educational experts co-opted to the Education Committee on its formation was the distinguished ex-headmaster, Dr. Dalton.

Of the rest, Chigwell is described by Prof. Sadler as having "made for itself a high position as one of the smaller public schools." It may be described as a local school with a very strong non-local element dominating it. It is quite evident that as London spreads out towards Epping Forest the local characteristics of the school will be accentuated and the County Committee and the Governors with wisdom on either side are co-operating for its development.

There is, on the borders of the same ancient parish, a wealthy and well-administered foundation—the Bancroft's School, under the control of the Drapers' Company. It is doing admirable work as a non-local school in educating and maintaining, free of charge, 100 boys, for the most part the pick of London elementary schools; and as a local school by making provision for twice the number of day-boys, resident in suburbs which are growing around it. Not less efficient are the schools in the two principal towns of the county—Chelmsford and Colchester. Both have history behind them, and some endowments, which have already been augmented by the county; and with their present headmasters are likely, under the new order, to increase their usefulness a hundredfold. At Brentwood, an old endowed school of classical traditions and excellent repute, proposals are being made for expansion, and for the inclusion of girls in the educational scheme of the Governors. Grays and Southend, newly cr boroughs, have risen to the occasion with remarkable eagerness, the former adapting a endowment for the education of boys and and the latter creating a new municipal sch both of them of the highest order of merit f educational work which has been done of th which they profess. At Newport and S Walden improvements have been made b buildings and in the character of the edu afforded; but because of their proximity f changes are inevitable. Earl's Colne has practically re-endowed by an individual factor; and this, and other considerations, i dering the change of the Endowed Scho Boys at Halstead (some four miles distan a girls' school imperative.

Most of the other endowed schools have dled for lack of means; but in every ca county has been ready for many years to all active development, and there are few, i of these ancient schools which are not ai some way by public funds.

Side by side there has grown up a large n of neo-secondary schools, particularly i largely populated districts, most of them mixed or dual character. Prof. Sadler very strongly on the importance of mainta as far as possible, the traditions of the schools and of assimilating to them those schools which are newly founded. He clai some of the former class the maintenance o classical character, and he expresses anxiet the literary efficiency of the newly created s should be lifted up by generous rivalry wi older grammar schools, until it is at least to their efficiency in mathematics and r science. All of these proposals have, to so tent, been anticipated by the County Comn but in this respect very much remains to be In many of the *new* schools the old " elementary" tone is prevalent, which, ind more in consonance with the aims of gov and parents.

The question of the training of teache gages considerable attention in the report. teachers for elementary schools are being with at a very large number of existing sec schools, and new schools, with pupil tea centres attached, are being set up in di otherwise unprovided with them. An inter suggestion is thrown out, though hardly p for present fulfilment, of attaching a traini partment for secondary teachers to Ch School in touch with the Training Colle Cambridge. Before this can be done, the bers of the school must be doubled at leas no training department can be thoro efficient in connection with any school of less 200 boys. Since the report has appeared th chief of sending to another endowed school teachers and probationers for elementary tea has been discovered.

Prof. Sadler notices with cordial approv very thorough system of scholarships which

throughout the county. There are minor rships, which take boys from the public ele- y schools to the secondary schools, at the f some 50 per cent.; there are major rships tenable at the higher secondary s in the county as well as in places of higher ion elsewhere; and there are scholarships ct connection with the University; so that s not a "poor boy" of intelligence in the for whom the road to learning is not made

ate secondary schools have naturally played considerable part in the education of the hitherto, and amongst the number is— s the best-known private school in the —The Forest School at Walthamstow, s the property of the Guy family, and under sent vigorous headmastership is supplying t need over a large and populous residen- trict, while maintaining its original non- haracter. It is not difficult to read into Sadler's mind the hope that the time will come when this school shall form a part of nty system. Like Felsted and its nearer our, Chigwell, it maintains the old classical n, though all three of them are doing effi- ork of a modern character, and may well with their present curricula undisturbed. irls' schools there are but few in existence, cannot be denied regretfully that Essex is and in this particular. One at Grays and at Walthamstow represent the public ions, and a highly efficient private school onstone has been already put under public ment by the county. There are, moreover, pporters of the higher education of women County Committee who are anticipating Sadler's demands in this particular by a provision; and already at Loughton, in the Forest district, a good start has been and another is projected for the county nd for Braintree.

e is certainly no county where the rela- etween the local authority and the second- ools are more thoroughly agreeable. This in a large degree to the generosity of the which the County Council, in the first in- accepted the nomination to seats on the ion Committee of representatives of the ities of Oxford, Cambridge, and London, the headmasters and headmistresses of d schools, while they co-opted in addition ers of experience in education, of whom e women, and two others past headmasters ndary schools. It is hardly necessary to at this happy concord has not been ed by the sympathetic relations of Prof. towards those who are actually engaged in nal work in the county; nor would it be close this sketch of his work without a gratitude to the secretary to the Education tee, whose praise is on the lips of all who ught into intimate relations with him.

de the sphere of secondary schools, Essex, ty bound, is doing much for technical edu- cation of various sorts; and the greater part of this is the work of the old Technical Instruction Committee. None of it is more noticeable and deserving of the warm approval which Prof. Sadler passes upon it than the agricultural work which is being done in connection with the County Laboratories at Chelmsford.

THE HIGHER ELEMENTARY SCHOOLS.

THE report of the Consultative Committee, recently issued, is an interesting document, and one that will repay careful study. At last the Board of Education seems to be waking up to the fact that the scholars trained in the elementary schools must earn their own living, and that it is therefore advisable that some attempt should be made to make the education given in these schools have some bearing on the after life of the scholars.

Whilst not in the least underrating the valuable humanising and civilising work of the primary schools, especially in the large towns, it has long been evident to those who have to deal with the finished product, whether as students in evening continuation or technical classes, or as employers of labour, that in spite of the heavy expenditure, the result, from an intellectual point of view, leaves much to be desired.

We believe that this is due mainly to the fact that the education given is for the most part wanting in reality; it is bookish, and seldom succeeds in teaching the children how to obtain knowledge at first hand.

The education of after life, the education that comes as the result of contact with the world, and of experience of men and things, is all first-hand education, and upon a man's faculties for obtaining and making use of it his success in life and his usefulness to the community depend. To lead up to this, the education in our schools must be brought much more into relation with practical life than it has been hitherto. This is the problem that the Consultative Committee has had before it, and, although the report bears every evidence of a compromise, it is full of valuable suggestions for a solution.

The first point to be considered is the differentiation of the higher elementary from the secondary school; this, in our opinion, is mainly a matter of leaving age and of general aim. There will always be a very large number of both boys and girls whose parents are unwilling to keep them at school beyond the age of fifteen, and who, at the end of their school life, will go directly into industrial life. In the past the bright children of this class, who have managed to get to the top of the elementary school at the age of thirteen, have either been kept "marking time" at the elementary school, or have been sent to a secondary school for eighteen months or two years to "finish," with disastrous results, both to themselves and to the school from which they had not time to get any real benefit. These will be the scholars of the future higher elementary

school; entering it at the age of twelve, they will be able to go through a course of real benefit to themselves before they leave at fifteen.

The secondary schools, the rolls of which have been swollen by the "one-year" and "two-year" scholar, will lose at first, perhaps, by their withdrawal; but they will really gain, in that they will be able to do their proper work, of training those whose parents are willing to send them to a secondary school at ten or eleven years of age, and are willing to keep them there until sixteen or seventeen years of age. The scholarship schemes of the chief local authorities now make provision for this long tenure of scholarships, so that the difficulty of the poor parent is met.

Upon the curriculum of the higher elementary school the Committee has much to say. From our point of view, we should say that, at the very least, the scholar, on leaving the higher elementary school, should have such a command over his own mother tongue that he can write an intelligent report on work that he has carried out himself; have such a practical working acquaintance with arithmetic that he can do a simple everyday workshop or office calculation with accuracy; be able to make a well-proportioned rough sketch of a simple object that will be understandable; and be able to use his hands.

These are of primary importance, and it ought not to be impossible to ensure that every scholar shall attain a fair standard in each, and yet not neglect that general "humanistic" training that it should be the work of every school to give.

These requirements necessitate that the backbone of the curriculum should be English (including history and geography), full use being made of good literature; elementary mathematics, taught with a practical bent, and largely on experimental lines; drawing of simple objects, both freehand and to scale, and manual work.

The subjects chosen for manual instruction will depend upon the needs of the community served by the school; some instruction in practical science of a simple character will have to form a part of it, at any rate.

In any case, the instruction in mathematics, drawing, and manual work must have a practical bent, and the arithmetical instruction especially must be of a more concrete character than it has too often been in the past. A lad should not, as is too frequently the case now, be able to manipulate large money sums, and do exercises in stocks and shares, and yet have not the remotest notion of decimals and simple mensuration.

This practical bent to the instruction necessitates that the teachers should be in contact with the requirements of practical life. The Committee has much to say about the source from which the teachers must be drawn. The debate as to whether the elementary or secondary schools should be the main source of supply has little but academic interest. Both sets of teachers in the past have been guilty, to an equal extent, of lack of interest in the practical life of the community. What is needed is that the teachers shall not only possess teaching ability, but also interest in the industrial life of the com for which they work.

The ideal training would be that of an o school teacher, with two or three years' ence of factory or office life added to it. I tice it will probably be found best not t the staff entirely from one source. Expe teachers from both elementary and sec schools, with a sprinkling of men who ha experience in technical or trade schools, al ing under the sympathetic direction of teacher open to new ideas and methods, found the best combination.

It is an interesting fact that the most s ful heads of this type of school up to the have been elementary teachers of the y generation, who, by some means or othe been in close touch with the workshops.

The Committee does well to lay stress fact that the teacher is the all-important in the success of the school, and local ed authorities would do well to lay this to As a rule, they are only too ready to spend lavishly in expensive buildings and equi whilst they grudge adequate salaries to t who have to carry on the work.

Something is said in the report about t tinction between the higher elementary a trade school. This distinction is, in our c merely a temporary one, and will tend appear: the trade school will become les trade school and the higher elementary more of a trade school. Both have as thei tion the preparation to enter a trade, and English notion that the technicalities of an trade are best taught in the workshop sound.

The higher elementary school for gir differ from that for boys, mainly in the ch of the manual instruction, which will ta form of instruction in domestic subjects. trade that most of them will follow will of wives and mothers, and no one at quainted with the magnificent work done domestic economy schools for girls, foun the late Technical Education Board for L can doubt that the practical side of the higher elementary school should be develo similar lines.

The Committee is to be congratulated general result of its labours. A great d been made, in certain quarters, of a su social bias in the report: this we have n able to perceive: it seems to us an hones to deal with a pressing problem; and it is hoped that the schools, when established, fluence the ordinary schools, rendering thei more practical in character, and bringing i closely into relation with the realities of l

Milton's Paradise Lost. Books I. and II. By Watt. xxiv.+88 pp. (W. B. Clive.) 1s. 6d.— purely an examination edition, done with grea closely condensed, and supplying all the needs of a date in a very thorough and painstaking fashion.

ING OF THE CLASSICAL ASSO-ON OF ENGLAND AND WALES.

enterprise of the Manchester Branch of his association in inviting the association o hold its annual meeting in Manchester ply justified by the brilliant success of the ng. Though the absence of the associa-resident, Lord Curzon, was a matter for gret, yet the city was fortunate in se-the presence of many of our most distin-scholars and educationists, including ster of the Rolls (Sir Richard Henn Col-r. Justice Kennedy, Mr. S. H. Butcher, he association's president for the coming Profs. Postgate, Sonnenschein, Robinson idgeway, and M. E. Sadler, in addition eadmasters of several of the more import-lic schools.

presidential address, delivered in the ab-Lord Curzon by the Master of the Rolls, efly remarkable as asserting the confident on that the study of the classical lan-in this country, largely owing to the work ssociation, has placed itself upon a new urer basis: that without any attempt to lise the whole field of education, a claim epudiated by all thoughtful advocates of cal training, without anything like jeal-or antagonism to, other studies, the as-n has asserted "the right of classical to a share in the education of the youth country." This is borne out by the fact newer universities, which offer facilities er education to a class not reached by the iversities, are putting into practice the that classical studies should be an in-art of education, and are strengthening chnical education by classical instruction. tice Kennedy, who followed with an ad-"The value of classical training for the ofession," expanded the dictum of Sir Maine that "legal science is a Roman ," and the remark of a recent writer in es that "in all that concerns law we are d in an unbroken and living union with Rome." Lord Curzon, in a letter read eeting by Mr. Butcher, expressed a great memorable words. "One reflection has to me which it may not be irrelevant ess. When we are in great grief, we turn for solace to the literary pastors and of our lifetime. Is it not a tribute to at classical writers of antiquity that, as they are from us by such vast differ-f age and circumstance and thought, e many of us who yet find in their wise hy, and still more in their exquisite a relief which not even the great writers wn language and time can as easily or riably impart? Is it not a remarkable at they should speak to us across the th accents so tender and so true? And this be counted an additional reason for them in unabated reverence?"

evening the association debated on the "relative function of classical and modern language teaching in secondary education." The Dean of Manchester (Bishop Welldon) in opening the discussion, with the view, as he expressly stated, of provoking argument, gallantly risked his reputation as a scholar and educationist by enunciating a number of somewhat disquieting paradoxes on the subject of classical teaching. He stigmatised the attention to Latin and Greek versification in schools as a scandalous waste of time, endorsed emphatically the opinion of the late Dr. Arnold, of Rugby, that it is hopeless to attempt to teach boys in an English school French pronunciation, and vigorousiy denounced the effort of "ill-informed or half-informed revolutionaries to produce what might be for the moment regarded as orthodox ancient pronunciation." Mr. J. L. Paton (High Master of Manchester Grammar School) slyly hinted that the views to which he had just listened made him look with disquiet upon the accession of the last speaker to his governing body. He thought classical teachers owe a great deal to the new methods which have been recently developed by modern language masters: we should imitate them and the Germans in employing the oral method in the teaching of Latin. Prof. M. E. Sadler dissented from the pessimistic prediction of a distinguished German scholar that in thirty years the study of Latin and Greek in German schools would be at an end: he personally does not feel that Greek and Latin are dead or ever will be; the fifteenth Idyll of Theocritus is newer than the *Daily Mail*. Prof. Ridgeway earnestly protested against the setting of grammar papers (in examinations) which require a knowledge of out-of-the-way forms not occurring in the authors most worth deading.

Friday's debate was somewhat academic in character, but at Saturday's meeting, at which the Dean of Manchester did not appear to uphold his heresies, the association devoted itself to the practical and important task of discussing, and voting upon, its committee's report on the pronunciation of Latin (see p. 422). The report emphasises the fact that we can in the main reproduce the sounds actually heard at Rome in the first century B.C.: and that the margin of doubt, though from the scientific point of view it is considerable, is nevertheless, from the practical point of view of the teacher, confined within very narrow limits: that the traditional English pronunciation entirely disregards historical accuracy, and accustoms the learner to fancy that languages existed as written rather than spoken: further, that it confuses sounds altogether distinct—a point subsequently illustrated humorously by Prof. Conway by the suggestion that a Roman boy, challenged by a playmate, must have said different things when his answer was "I yield" (cedo), and when it was "I knock you down" (caedo).

Mr. Butcher, in advocating the adoption of the report, after briefly reviewing the rapid strides which the new pronunciation has taken in the British Isles, made an eloquent appeal on its

behalf for the sake of uniformity: there is now a babel of dialects spoken, and the boy goes through different zones of pronunciation—a very happy description of the chaos which at present exists in the matter. "The reformed pronunciation," he went on to say, "links speech and writing, language and literature, in a way that makes people feel that Latin was once a real spoken language. It makes the language far more living and less remote from life. It links together the ancient and modern world, and a boy learns the relation between Latin and the Romance languages, which simplifies the learning of all modern languages." Mr. W. G. Rushbrooke (St. Olave's School, London) testified from long experience to the absence of practical difficulties in the teaching of the new method. Prof. Postgate made the meeting merry by a playful allusion to Plautus's jest in the *Menaechmi*. "Tu, tu istic, inquam! Vin adferri noctuam, quae 'tu tu' usque dicat tibi?" At this point the secretary (Prof. Sonnenschein) read a letter advocating the adoption of the contemporary pronunciation of Italian as a guide to the pronunciation of Latin, in place of the scientific philological reproduction of the ancient speech recommended in the report: this was greeted with ominous silence, and failed to find a seconder.

The resolution in favour of the report was adopted with only one dissentient. It is perhaps a little unfortunate that hardly a discordant voice was raised in the debate, though a happy result that the vote was so nearly unanimous. No speaker directed attention to the argument so often used by advocates of the English tradition, that the new method, if practised with any carelessness, tends in the case of one or two vowel sounds to obscure quantity: to an English ear the difference in quantity of the first syllables of păter and māter is much more clearly marked by the traditional English pronunciation (păt and māte) than by the new pronunciation: still, there are few questions on which the balance of argument is so entirely one-sided.

At the close of the discussion, Prof. Sonnenschein moved that the "Council be instructed to draw up a memorial to the President of the Board of Education urging him to take action toward securing the adoption of a uniform system of pronouncing Latin in secondary schools aided by grants from the Board." The feeling of the meeting was decidedly adverse to any suggestion of invoking State aid on a controversial matter, and as time did not allow of a full discussion, the resolution was withdrawn.

Bacchylides. The text edited by Sir Richard Jebb. viii. +56 pp. (Cambridge University Press.) 1*s*. 6*d*.—It was a happy thought to print the text of Jebb's Bacchylides separately at a cheap price. Scholars are probably agreed that this is a more scholarly text than that of Blass, its only rival for the impecunious; it is also better printed, and altogether is a nice book. But why will publishers use square brackets to indicate the restored portions? A difference in type would do it equally well and without making *the eye smart*. Some of the pages are positively repulsive.

OF MAKING MANY BOOKS

OF making many books, says the P there is no end; and, had he lived he would have extended his refl reprints. It is true that no list of re available for the purchaser or the reade value of such a list no one seems to have but from the few books that are sent to paper, one may guess at the enormous

Probably nobody but the booksellers who buys Law's "Serious Call," "Holy War," "The Advancement o ing," Blake's poems, and Finlay's "E Empire." People do buy them and c ask for them; they are no mere hapha chases. Not even the booksellers, howev tell who reads these books. We charitable, and suppose that the purcha them. This being so, the reprint fash sincerely be recommended. Scornful pe have it that the books are never read read, not appreciated.

The cause of the unwonted rep tivity is to be found in the sp reading, and this is due partly to th a new class which wants to read books afford only cheap books, partly to the against purely scientific teaching, and the efforts of the Board of Education, t Reading Union, and other agencies. evitable that a good deal should be which is not worth reprinting; but at we may pick and choose: we are not c to buy.

The problem of home and school re not quite so easy of settlement as to son it may seem. Unless it be at once conc a child or young person may read any the paternal bookshelf, a difficulty arises for, as a rule, publishers will not ca lavishly for the schools and for the you children's books (reprints) are, as yet, very forward condition. We will put th for an instant, and glance at series not meant for schools.

Methuen's Little Library (1*s*. 6*d*.) i ably done. "Pride and Prejudice," "Essays," "Vanity Fair," the "(Angler," are well printed and well edited can only regret that Dante is repres "Cary," and that "Rejected Address selections from the "Anti-Jacobin" finc denied to "The Seven Gables." The Library of the same publishers (1*s*.) is to be praised, though it is not so dai how many cheap editions there must b "Vicar of Wakefield" and "Cranford. ever, "Chatterton" and the "Little F and "Tamburlaine the Great" and (we the "Vita Nuova" deserve purchase public would nevertheless benefit on the four or five great publishing firms could mate and, by purchase of copyright means, give us at a cheap rate some of t

.g., a real Dante, a good collection of
nd a translation of French and German
es done by persons who understand
ranslation. But Methuen's catalogues
sure to read. To turn to Blackie (for
only), what could be more delightful
-acquaintance with Purchas, Raleigh,
ichard Hawkins? These texts, edited
ise. and called School Texts, are really
o other cheap form than this sixpenny
e get such books as the "Discovery
" and the "Taking of the Galleon."
"English Epic." To Blackie's Eng-
ics have been added the "Select
f Lowell and Browning's "Saul" and
n Ezra" (2*d*. each).
g's Classics of Mr. Moring (1*s*. 6*d*.)
ure comparatively unknown, but very
o the book-lover. Roper's "Life of
as More," Dekker's "Gull's Horn-
l the "Chronicles of Jocelin of Brake-
ld have been pounced upon with de-
ears ago. They are books we have all
they are real books; and in their pre-
t form are a better investment than any
of the latest novels.
ain, we might spend time in comment-
unassuming Carmelite Classics, pub-
Horace Marshall, and, indeed, on
catalogue generally. It is true the
are not, like the books just mentioned,
way, for in some form or another we
the Prologue and Milton's "Comus";
editions are scholarly, cheap (6*d*. or
satisfying to the man who asks for
-the book and reverence for the book.
take up little room; the whole series
towed in a pocket. Miss C. L. Thom-
enthusiastic and scholarly work has
praised in these columns, has selected
s of "English Literature from Defoe
(1*s*. 4*d*., pp. 1–200). Other volumes
paration, and the whole seven should
e anthology. It is not with any de-
ypercritical, but simply to direct atten-
ore to a common mistake that we ask:
the exact editor print the famous line

Await alike th' inevitable hour?

that the Golden Treasury prints it so;
otes to the Golden Treasury rightly
its, often misprinted *await*." Perhaps
edition of the Golden Treasury has re-
e error; the 1775 edition of Gray reads

London Merchant," "Fatal Curi-
e "Maid's Tragedy," and "Phil-
are presented (in two volumes,
each) by Messrs. Heath; and
se dainty volumes justify their title
es Lettres Series. We have all the
spelling, admirable introductions, suit-
, and good bibliographies. We have
little in England for our old drama,
are grateful enough for the Mermaid Series; but these books are fuller than the Mermaid plays, and all the old-world flavour is in them, binding, text, spelling, and all. They are edited respectively by the Master of Peterhouse and by Dr. Thorndike.

Macmillan's Cabinet Library of sixty-two books in their bookcase is another example of an admirable set of reprints; while with regard to Everyman's Library (J. M. Dent) every man is buying it, and there is little to say. But here we find along with the many more familiar books Speke's "Nile," "Lady Mary Montagu's Letters," Latimer's "Sermons," Cellini's Autobiography, Mrs. Cowden Clarke's "Girlhood of Shakspeare's Heroines," and Percy's "Reliques." The promise of this series is unbounded; it looks as though it were going to be another Bohn.

With all these at his command the limited-income book-buyer cannot complain. Yet, great as is the sale of these works, we are convinced it would be greater if a complete catalogue (1*d*.) of standard reprints costing not more than 2*s*. 6*d*. each were to be furnished every three months to the principal bookstalls. It would probably be printed at a loss, but it would be an admirable advertisement. As it is, publishers are flying at one another's throats, and the public get half-a-dozen cheap editions of "Pride and Prejudice" and cannot buy "Phineas Finn." Moreover, while disconnected series abound, we have sometimes to wait for years for a connected series to be finished.

Between these books and the school books proper come the beautiful nature books, which are so well adapted for prizes and for rewards *to the children who appreciate them*. Macmillan publishes "Insect Life" and the "Souvenirs of a Naturalist," and Ginn has "Nature Study and Life." They are typical of a large series of fascinating nature books, and the names of Selous, Long, Thompson-Seton, are by this time household words with the young naturalist. It is a great mistake, however, to think that these books are appreciated by all, and story books by Cooper or Marryat (published now by many firms) are almost the only prose that certain boys will read with pleasure. The problem of girls' books has not yet been successfully attacked; it is possible that Miss Bland might solve it, if she were grown up; at present she is twelve years old, and is not growing. But what a childhood is hers!

When we turn to school books, *i.e.*, books of connected reading fit for schools, we are not so self-congratulatory. True, we have Kingsley's "Heroes" (Macmillan, Blackie, and Dent), Rouse's old-world texts (referred to above), E. J. Arnold's A1 Bright Story Readers, Dent's Temple English Literature Series—all admirable; but as yet they have not taken the hold that they deserve. Probably this is due to two facts—first, we have not yet got the teachers to appreciate these books, and, secondly, we want still to examine the children. We are not content to put libraries in

all our class-rooms, to read the books, and leave the result to time. We still love "Readers"; we delight in fine-drawn work; we are the slaves of notes. We blind our eyes to the fact that it is only a small portion of Shakespeare, Wordsworth, Tennyson, Burke, Macaulay, the "Spectator," that the boy and girl appreciate or ought to be able to appreciate; we *will* not see that English literature and a love for it cannot be taught, but may be learnt; and, above all, we will not spend money in literary apparatus. Fortunes have been made in school books, arithmetics and geographies, and possibly in "Readers"; but in the new type of book, the dainty unschool-like Stories from the Sagas or the Boy's Froissart, the fortune is, we should think, far away.

It seems that the ideal reading-book (for children of thirteen or fourteen) is one like "Old Christmas" (Macmillan), published at 6*d.* years ago, and now out of print, and illustrated by a masterhand. It has been reprinted in other forms, not quite so alluring, and it may be seen in a series, the Illustrated Pocket Classics; but the large, beautiful sixpenny edition is lost for ever. For a set of books like this, large, carefully chosen and well illustrated (it is o. p., so we can speak very freely), we would give dozens of the flamboyant readers and sparsely illustrated Coopers and Scotts. The publisher knows his business best, and no doubt such a series would not pay. But supposing that the illustrators, the riotous, imaginative, sympathetic illustrators were available (names of the dead and living crowd to the memory—Batten, Caldecott, Greenaway, Thomson, Lemercier, Gordon Browne), and the large, easily opening, well-printed, thin, cheap book were possible, what a sale might be expected for, and what results might be expected from, the "Wonder Book," "Miss Kilmansegg," "Bracebridge Hall," the "Ancient Mariner," the "Talisman," and, above all, the Old Testament. No one who has not seen an easily handled, profusely illustrated book in the hands of a class can judge of the effect. The present writer can, as he pens these words, feel the silence of the large class-room, and the indrinking of the book so different from, and yet quite as interesting as, *Sketchy Bits*.

PSYCHOLOGY AS A LABORATORY STUDY.[1]

IT has been said that the world is made to measure. There is ambiguity in the statement, but the man of science accepts it as an expression of the fact that quantitative equivalence is universal and may, with adequate perseverance in research, be formulated. All our sensory impressions are due to physical stimuli. With variations of the stimulus, there are variations in sensation. From the time of Weber (*circa* 1831) to the present day an increasing amount of experimental work has been out with the object of ascertaining th quantitative relation of these two sets tions. Broadly speaking, it seems proba within the normal responsive activity of organ, to obtain a series of equal incre sensation, the increments of stimulus m geometrical progression. In other word sensation-values are represented by ordin the stimulus-values by abscissæ, the cur passes through the points determined by tion is approximately logarithmic.

Prof. Titchener's work contains an e consideration and critical discussion methods employed in such psycho-physica gations, and the results which have been by the leaders in this field of researc admirably executed, and those who wish the present position of this branch of inquiry cannot do better than co volumes.

In the United States a course of practice is part of the recognised tra student of psychology. Its value a cannot be questioned. It forces the think and to translate his thought into th of fresh experiments for the solution o problems. It gives him that sense of c which arises from doing work upon hi instead of merely letting the subject upon him. Our friends across the Atl it difficult to understand why we in En so slow to follow the German lead in th That we shall do so to a somewhat grea is not improbable; that we shall affor discipline a position analogous to that occupies in the universities of America is

While freely admitting that all exac are of value, there seems to be a feeli country that the range of psycho-physic stricted one. It throws light indeed o land problems lying between physiol psychology. It increases our sense of tinuity, of some kind, that exists th nature. It strengthens our confidence i mechanical—that is to say, a scientif pretation of physiology, more especia are justified in inferring that psych formulæ are essentially the expression of physiological relationships. But from of view of worth for the intellectual lif yet to establish a claim independent o physiology on the one hand and that science on the other. Quantitative rela there may be and doubtless are, but of us the worth of psychology is indep quantitative measurements. Be that as however, Prof. Titchener has earned ar receive our gratitude for giving us a wor as it is comprehensive.

[1] "Experimental Psychology, a Manual of Laboratory Practice." By Edward Bradford Titchener. Vol ii. Quantitative Experiments. Part i. Student's Manual. Part ii. Instructor's Manual. (Macmillan.) Part i., 6*s.* net; Part ii. 10*s.* 6*d.* net.

The Sir Roger de Coverly Papers. By R. C xx.+116 pp. (Dent.) 1*s.* net.—Handy, chea elegant, carefully done, and furnished with introduction.

NEW BUILDINGS OF THE GIRLS' HIGH SCHOOL, LEEDS.

ptember 29th H.R.H. Princess Louise paid a visit to open the new Girls' High School at Headingley. ldings, which have accommodation for 300 pupils,

FIG. 1.—The Chemical Laboratory, Leeds High School for Girls.

resting to teachers as embodying the latest ideas ol architecture and equipment. The general plan icity itself. In the centre is the assembly hall, hich, on three sides, are grouped the other rooms. is lighted from the north, and is the height of two Opening into it by means of arches are the main of the building, so that the accommodation can be easily d on special occasions.

outh front of the school, which broad terrace and extensive contains the majority of the ms. Here, on the ground e the library, VI. form, head- stant-mistresses' rooms, and, at niest corner, the preparatory ent, with its own entrance and om. In the eastern and wings are the lobbies and oms for the elder girls, and hem the music-rooms, removed as possible from the ordinary ms. The second floor contains ratories, studios, dining-rooms, chen. The gymnasium forms ate building, but is connected e main block by a covered

the exterior of the building is lmost to severity, the greatest s been given to the decora- he interior. Each room has its own colour scheme, s far as possible to prevent monotony. The hall, in itself, is to be decorated with casts of ancient . It is hoped to cultivate in these ways the aste of the girls. In a similar way it is intended rage the love of literature by making the library a beautiful and comfortable room, which the elder girls are allowed to use freely for their private reading.

The importance of science and art has been fully recognised in planning the buildings. The whole space above the assembly hall is occupied by a double studio, with an excellent north light. The electric light fittings are arranged above the long line of windows, so that the failure of daylight causes no disturbance of the work in hand—an advantage of no small importance in foggy Leeds.

The physics laboratory—to be used also for geography—presents few striking features beyond the simplicity of the benches and the very large amount of wall space which has been arranged for use in mechanics. Two items of the equipment for geography are uncommon in schools. Suspended from the ceiling over the platform is a large globe, counterpoised so that it can be raised out of the way when not in use, and above the blackboard is fixed a dust-tight case containing the maps on spring rollers, so that they can be drawn down as required. In both this room and the biological laboratory a simple arrangement has been contrived whereby lantern-slides can be shown without excluding daylight. The lantern is placed on the demonstration table, and is tilted upwards, the pictures being thrown a comparatively short distance on to a three-foot screen fixed near the ceiling.

The chemical laboratory contains benches for twenty-four students, of a less massive type than is customary. The cupboard accommodation is therefore somewhat limited, but free access is given to the whole length of every pipe and drain—an advantage which science teachers will readily appreciate. No central shelves disfigure the benches and break the view down the laboratory, the reagents in constant use being arranged on glass sheets slightly raised above the level of the table. The balance

FIG. 2.—The Kitchen Laboratory, Leeds High School for Girls.

cases are fixtures along a side wall, with glass doors sliding back into the top of the case. In front of the demonstration table are arranged rows of narrow benches, which may be used for taking notes during demonstrations or for doing simple experimental work in heat and chemistry.

On the top floor, also, is the kitchen laboratory, the purpose of which demands special explanation. The committee having applied to the Board of Education for recognition as a secondary school, is bound to provide progressive instruction in science and manual work. The latter, in the case of girls, may take the form of a practical course of housewifery. A kitchen laboratory has therefore been equipped, so that the "reason why" of every culinary operation may be investigated. It contains large ranges for use with coal and gas. The students' benches, which are provided with smaller stoves, are arranged in an open square on three sides of the room, the demonstrator's stove and table forming the fourth side. The plain deal benches give sufficient space for pastry making, ironing, and other domestic operations, and in the window spaces provision is made for laundry-work. Continuation classes in domestic science for girls who have left school will be held in these rooms under the direction of the Yorkshire Ladies' Council of Education.

The biological room, which contains an aquarium, is shortly to be supplemented by a garden laboratory, which will be fitted so that small classes may be taken in it. A botanical garden is being laid out, with special plots reserved for experimental work and for the use of girls who wish to learn gardening.

The grounds, surprisingly beautiful considering their proximity to the town, contain several tennis courts, as well as an old-fashioned garden, sheltered by fine trees, which is reserved for the use of the mistresses and the VI. form.

In such pleasant surroundings the school will doubtless continue the traditions connected with the distinguished names of Miss Powell and Miss Kennedy, and, under the able guidance of the headmistress, Miss Lowe, and her efficient staff, develop on many sides, and enter upon a still wider sphere of honour and usefulness.

THE PRONUNCIATION OF LATIN AND GREEK.[1]

AT the second general meeting of the Classical Association held in London on January 6th, 1905, the following resolution was adopted with all but complete unanimity:—

"That the Council be requested to nominate a representative committee to consider and report on the best method of introducing a uniform pronunciation of Latin into the universities and schools of the country, and that it be an instruction to this committee to confer with the committee to be appointed for a similar purpose by the Classical Association of Scotland.

"That the same committee be empowered, if they deem it advisable, to consider what changes in the present pronunciation of Greek should be recommended for general adoption."

The Council accordingly sought the advice of the following representative committee of teachers and scholars whose experience or special knowledge gave authority to their judgment upon the question:—Mr. S. H. Butcher, Dr. R. S. Conway, Mr. C. A. A. Du Pontet, Prof. Robinson Ellis, Mr. R. C. Gilson, Dr. J. P. Postgate, Dr. W. H. D. Rouse, Mr. W. G. Rushbrooke, Mr. S. E. Winbolt, Miss M. H. Wood.

After a preliminary consideration of the Classical ciation's scheme, the Philological Societies of Oxfo Cambridge, at a joint meeting held at Oxford, mc the same direction, and adopted substantially i proposals, which the Council of the Classical Ass decided to support. The Council *appeals to all t teachers in the United Kingdom to adopt the me pronunciation here set forth*, and by so doing to the diversities and ambiguities of practice whic long been a serious obstacle to every stage, and e to the early stages, of classical study in this countr

PREAMBLE TO THE REPORT.

In drawing up the scheme of Latin and Gr nunciation the committee has been in general g the following considerations:—

1. Both the discussion of the question at the of the Classical Association, and the evidence b committee of the practice of different schools anc sities, seemed to show that there was little hope o agreement upon a uniform scheme if its basis we in any one of the varieties of what has been k "the English pronunciation." It appeared, ther the outset, apart from the practical and theoretic backs involved in this usage, that the committee discharge the duty entrusted to it without seek other system. And since the old basis of Englis has thus admittedly broken down, the only other point which seemed natural or expedient was th pronunciation of the Romans and Athenians them

2. In any attempt to frame a method for ge there are two conditions the fulfilment of which to the committee to be equally desirable.

(*a*) On the one hand, the scheme proposed shoul if our knowledge can secure it, at least a reasc proximation to the sounds which actually existed times; and on the other, it should avoid placin necessary difficulty in the way of beginners in Latin o

The progress of philological research has ma sible to meet the first requirement. We can in reproduce with certainty the sounds actually Athens in the fourth century B.C. and at Rome i The margin of doubt that remains, though scientific point of view it is considerable, is n when seen from the standpoint of the practic confined within very narrow limits.

For example: some scholars may feel a doubt wl *i* more nearly resembled French (close) *i* in livre (= queen) or Italian (open) *i* in cività (= Scotch *i* in times represented by English writers as *ee*, "peety" it was immeasurably nearer to Eng. *ee* than to the Ei diphthongal) *ī* in line, tide, &c., is clearly demo universally admitted.

(*b*) In the second place, after careful discu in the case of Latin, the experience of some t the committee feels that the scheme propose difficulty that can reasonably be called seriou none so baffling as the confusions of the "Engli In the oral work of a class, in particular, i found that the adoption of the ancient pronunci a great economy of labour.

3. The chief faults[1] of the method which proposed to banish may be stated as follows:—

[1] Report of a Committee of the Classical Association of England and Wales.

[1] This paragraph is adapted by permission from the Messrs. Arnold and Conway's "Restored Pronunciation Latin" (1895).

ke other methods which prevail locally in various Europe, the "English" fashion chiefly finds ac- from the immediate convenience of giving to bols of the Roman alphabet, and the correspond- bols of the Greek, the sound which they most y denote when used to write English. But even venience is delusive, since the pronunciation of varies greatly in different parts of the kingdom, will be seen, where the standard or London pro- n is most carefully inculcated, there the result ct, in some respects furthest from the true Latin A Scotch or Yorkshire lad will pronounce Latin more correctly, and distinguish it far more clearly tin *ă*, if left to his own instincts than if trained tured teacher who adopts the unreformed method. ltogether disregards historical accuracy, and accus- learner to fancy that languages exist as written an as spoken: for he is put to no trouble to the true sounds of the language he is studying. him in a very real sense a "dead" language: s or never begins to realise that by its help women lived, felt, and thought: and is directly ed in a mistake which defeats the very purpose lucation, the mistake of regarding books as some- mote from life rather than as an integral part ife of mankind and therefore of that for which lf is preparing.

e local "English" method of pronouncing Latin k must be condemned also on the following more grounds, which involve consequences smaller in es but obviously and immediately mischievous:

confuses distinct sounds, and hence distinct words: and *seu, caedit, cedit* and *sedit, caesae, caecae , noscet, nosset* and *nocet, Lucio, luceo* and *luteo* othing of *so-lutio*), *κεῖται* and *χαῖται, καίνῳ, κείνῳ* and pronounced alike.

bscures quantity: *mensis* (abl. plur.) is pronounced *is* (gen. sing.), and very often *mensa* (nom. sing.) *nensa* (abl. sing.): *malum* (evil) and *malum* (apple) e alike, and so *venit* (present tense) and *venit* The same confusion occurs in the case of Greek, ot to the same extent.

two defects largely conceal from the student the and rhythmical beauties of the two languages. e learner acquires by ear at the very beginning ews as to the relations of languages, and, in r, fails to recognise the natural tie between Latin Romance languages. Latin *a*, instead of being ed as French *a*, is made to sound like French happening to be the common value of English *a*. way the interesting and, to a boy's mind, stimu- onsciousness of the connection between language ory is for the time, at least, obscured.

e committee thinks the present a suitable oppor- o raise the question whether the vowel sounds to modern English should be allowed to remain eaching of Greek any longer than in Latin. For owels and consonants can be correctly pronounced l's *cratera*, they can in *κρατήρ*; if in *heros*, then if in *musa*, then in *μοῦσα*. It is true, no doubt, give to the Greek accents their real musical value ifficult an art for the average schoolboy; and the ee feels little hesitation in leaving the question side. But in this and some other matters men- elow in the Greek scheme, there seems no reason at is both true and, in practice, important should ted because in other things of less practical im- portance either the truth or its application to practice is difficult to reach. Most of the pronunciations which are included in the committee's proposed scheme in Greek, especially those of the vowels and diphthongs, have been long in use in more than one Scottish university, and as Prof. Goodwin records (in the preface to the seventh edition of his Greek Grammar) are adopted with something like uniformity in America.

5. It may perhaps be felt that the effort needed to introduce the method here advocated into schools and universities where the "English" method is still current is in itself an embarrassment. But this difficulty is steadily decreasing. The Cambridge Philological Society's pamphlet, which as long ago as 1879 urged the reform of Latin pronunciation, has had a wide influence; the University of Wales has adopted a restored pronunciation of both Greek and Latin, and accepted it in Latin of all candidates for its Matriculation, for the last ten years; and recently the Association of Assistant Masters has by resolution advocated the same reform. The committee ventures to hope that all friends of classical studies will loyally support the Classical Association in its attempt to free the study of Greek and Latin from the entanglements of an irrational though time-honoured usage which have at length become a serious burden.

The Restored Pronunciation of Latin.

A. Primary Points.

The following points are those which it is a matter of practical importance to impress upon students of Latin from the outset.

Quantity.—In pronunciation the quantities of the vowels must be strictly observed: *e.g.*, *lābor*, not as English *lābel*; *mĭnor*, not as English *mīnor*; *nŏta*, not as English *nōte*. This is essential for the proper appreciation, in prose, of sound, rhythm, and distinctions of meaning (*e.g.*, *lābor*, *lăbor*), and, in verse, of metre also.

Vowels.—The following is approximately the pronunciation of the vowels.

ā (prātum), as *a* in fā*th*er, not as *a* in m*a*te.

ă (răpit), the same sound shortened, as *a* in *a*ha.

ē (mēta), as *a* in m*a*te (Fr. *é* as in bl*é*), not as *ee* in m*ee*t.

ĕ (frĕta), as *e* in fr*e*t, not as *ee* in m*ee*t.

ī (fīdo), as *ee* in f*ee*d (Fr. *ie* in am*ie*), not as *i* in f*i*ne.

ĭ (plĭco), as *i* in f*i*t, not as *i* in f*i*ne.

ō (nōtus), as *o* in n*o*te (or nearer Italian *o* in R*o*ma).

ŏ (nŏta), as *o* in n*o*t (Fr. *o* in b*o*tte), not as *o* in n*o*te.

ū (tūto), as *oo* in sh*oo*t (Ital. *u* in l*u*na), not as *u* (yew) in ac*u*te.

ŭ (cŭtis), as *u* in f*u*ll, not as *u* in acc*u*rate, nor as *u* in sh*u*n.

In all cases the vowels are nearer to the Continental than to the English sounds.

Diphthongs.—The sounds of the diphthongs may be arrived at by running the two component vowel-sounds rapidly together, the second being pronounced lightly. The most important are:—

ae (portae) = a͡e, nearly as *ai* in Is*ai*ah (broadly pronounced), Fr. *émail*, not as *a* in l*a*te.

au (aurum) = a͡u, as *ou* in h*ou*r (as Ital. *au* in fl*au*to), not as *aw* in *aw*ful.

oe (poena) = o͡e, nearly as *oi* in b*oi*l, not as *ee* in f*ee*t, nor as *a* in l*a*te.

N.B. In recommending these sounds for ae and oe, the committee is guided mainly by practical considerations, since it has been found by experience that this pronunciation is of great convenience for class purposes. The committee regards it as clear that this was the pronunciation

given them in early Latin, and that they were still clearly distinct from the long *ē* in the time of Cicero, though their precise sound then is difficult to determine, and would probably be still more difficult to inculcate in an English school.

Consonants.—c, g, t, s are always hard, and never vary in pronunciation.

c (cepi, accepi), as *c* in *cat*, not as *c* in *acid* or *accept*.

g (gero, agger), as *g* in *get*, not as *g* in *gibe* or *exaggerate*.

t (fortis, fortia), both as *t* in *native*, fort*ia* not as *potential*.

s (sub, rosa, res), as *s* in *sit*, or *ce* in *race*, not as *s* in *rose* or *raise*.

Similarly when compounded—

x (exul) = ks, as in *extract*, not *gz*.

bs (urbs) = ps, not bz.

They are hard even before i.

c (facio), as *c* in *cat*, not as *s*, nor as *sh*: *e.g.*, condicio = condi*k*io, not condi*s*io, nor condi*sh*io.

g (tangit), as *g* in *get*, not as *g* in *gibe*.

t (fortia, ratio), as *t* in *native*, not as *t* in *nation*.

s (sponsio), as *s* in *sponsor*, not as *s* in *responsions* or *conclusions*.

i and u consonantal.

i (j), *e.g.*, jacio, as *y* in *you*, not as *j* in *Jack*.

u (v), *e.g.*, volo, practically as *w* in *we* (Fr. *ou* in *oui*), not as *v* in *very*.

r is always trilled, even in middle and at end of words: *rurus*; *parma*, *datur* (not pronounced as English *palmer*, *hatter*).

Double consonants are separately pronounced as in Italian, one in one syllable, the other in the other: *e.g.*, *vac-ca*, *pul-lus*.

B. Secondary Points.

Diphthongs.

Rare
- ui (huic) = u͡i, as Fr. *lui*.
- eu (heu) = e͡u, nearly as English *ew* in *new*.
- ei (ei, interj., or Pompēī, voc. of Pompeius) = e͡i, as *ey* in *grey*, not as *i* in *dine*.

Accent. If the penultimate syllable is long, it has the accent; if the penultimate syllable is short, the antepenultimate has the accent, *e.g.*, negāret, agrēstĭbus.

The accented syllable was pronounced with greater force as well as on a higher note; but the differentiation in force was considerably less than in English. The separate syllables of a Latin word should be more evenly and distinctly pronounced than in English, and more nearly as in French.

C. Additional Points.

A (and afterwards B) should be mastered by the pupil.

There are other points which should always be observed by the teacher. These are set forth in

(i) "Pronunciation of Latin in the Augustan Period." Cambridge Philological Society. Deighton, Bell and Co., Cambridge. (3*d*.)

(ii) "The Restored Pronunciation of Greek and Latin." Arnold and Conway, Cambridge Univ. Press. (1*s*.)

GREEK PRONUNCIATION.

A. Primary Points.

Quantity.—As in Latin, the quantities of the vowels should be strictly observed. For example, the short vowels in πατήρ, τίτω, χώρα, ὕδωρ, should be carefully distinguished from the long vowels in φράτρια, κἰτρὸς, χεῖρα, ῥητὸς.

Vowels.—ă and ᾰ, ĭ and ῐ, ĕ and ŏ (the last two being short) may be pronounced as the corresponding Latin.

η (long open *e*) as *e* in Fr. il m*è*ne (nearer Eng. than *ey* in *grey*).

ω (long open *o*) as *o* in Fr. enc*o*re (nearer Eng. *o* than Eng. *o* in *bone*).

υ as French *u* in d*u* pain.

ῡ as French *u* in la v*ue* or Germ. *ü* in gr*ün*.

Diphthongs.—αι = α + ι as Eng. *ai* in Is*aiah*.

οι = ο + ι as Eng. *oi* in *oil*.

υι = υ + ι as Fr. *ui* in l*ui*.

In ᾳ ῃ ῳ the first vowel was long, and the second silent.

ει.—The precise sound of ει is difficult to determine, but in Attic Greek it was never confused with ι in the late period, and to maintain the distinction clearly it is perhaps necessary to allow English students to pronounce it as Eng. *eye*, recommending them, however, to pronounce the first vowel as near the front of the mouth as possible. In fact it must have been nearer to Fr. *ée* in pas*sé*.

αυ = α + (primitive Greek and) Lat. *u*, as Eng. *ou* in Germ. *au* in H*aus*.

ευ = ε + Lat. *u*, nearly as Eng. *ew* in *few*.

ου as Eng. *oo* in m*oo*n, Fr. *ou* in r*oute*.

Consonants.—π, β, τ, δ, κ and γ as *p*, *b*, *t*, *d*, *g* respectively in Lat.; except that γ before γ, κ and to denote the nasal sound heard in Eng. *ankle*, *anger*.

ρ, λ, μ, ν as Lat. *r*, *l*, *m*, *n*.

σ, ς always as Lat. *s* (Eng. *s* in mou*s*e), except before where the sound was as in Eng. ro*s*ebush, ro*s*emary.

The committee does not see its way to su alteration in the current pronunciaion of the a

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ELEMENTARY EDUCATION IN LO

THE London County Council became the Local Authority for the Administrative County of L May 1st, 1904, and, consequently, not only s the powers and duties of the London School B also is required "to maintain and keep efficient elementary schools within the area which are s Further, the council is commissioned by the Acts "to supply or aid the supply of education elementary, and to promote the general co-ord all forms of education." That the council's ta of great magnitude may be appreciated from the facts:—

The council purchases sites, designs, and erec schools; engages, pays, and gives further train own teachers; equips the schools with furnitu apparatus, and tools; supplies fuel and light, its own cleaning and repairs. Further, the co poses to train, from pupil teachers to certificated many of its own staff.

The cost of public education in London is £ gross, or £3,000,000 net, that is, after deducti from the Board of Education. Of the net cost, £ is required for elementary education and £5 higher education.

The average roll of the public elementary s 750,000.

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[1] From a report of the Education Committee of the Lon Council submitting the return prepared by the executive office elementary day schools maintained by the council for the year e 31, 1905.

il partly supplies and partly aids the supply lucation. The following are the institutions ained or aided by the council :—

by the council—13 technical institutes and t; 3 training colleges; 8 pupil-teacher centres; schools; 370 evening schools.

the council—4 university colleges; 29 polynical institutes, and schools of art; 1 training econdary schools.

al authority for all branches of education, it upon the council to erect additional secondary to provide training colleges.

uthority was responsible for the administra- Industrial School Act; it maintained and industrial schools, 3 day industrial schools, t schools; in addition, it contributed towards nce of, and was responsible for, 3,000 children , with which it entered into agreements. The taken over all this work, in addition to the s direction which previously devolved upon it uthority. The council further took over from ority the administration of special schools for deaf, physically defective, and mentally de-

of teachers in the service of the council ut 20,000. Of these about 17,000 are engaged mentary schools, and receive salaries amount- than £2,000,000 a year. The staff engaged inistration of educational work in London ut 500, and in addition there are about 400 ged as attendance officers for the enforcement endance.

to maintain and keep efficient all public eleools within the area which are necessary and ided by the council, it was essential to ascertain specting those schools. One of the first and tant tasks of the council was, therefore, a on-provided schools. The survey involved the e organisation, and the staff. It was found 199,342 children in attendance at 433 nonools, as against 550,858 children in 527 prouncil schools. On the result of the council's non-provided schools (229 departments) were uitable from the point of view of structure. ctural improvements were required in a great ases. In all, between the closing of unsuitable nd the reduction of accommodation through nprovements, 68,824 school places were lost. as inevitable, but the replacement throws a n on the council. As to staff, it was not found bring the schools at once into line with the which obtain in the provided schools. Diffiganisation, dislike to working in inconvenient nterests of existing staff, and actual scarcity stood in the way. Great improvements were, nmediately made. On May 1st, 1904, there rk in non-provided schools 2,192 certificated ,597 uncertificated teachers, and 800 supteachers. The council's scheme of fixed staff included 2,773 certificated teachers, 1,496 unteachers, and 537 supplementary teachers, an t represented more by change in character rease in numbers, although the total staff was 217.

the close of 1905 the council adopted a scheme ips which, though it forms part of the proigher education, must profoundly affect the public elementary schools. The council's regulations provide that annually all children who are attending public elementary schools in London, and who are not less than 11 years of age, and not more than 12 years of age, on July 31st, should be nominated for the competition for junior county scholarships, provided that, in the case of boys, they are in the sixth or a higher standard, and in the case of girls, in the fifth or a higher standard. The probationer scholarships are open to candidates who are not less than 14 years of age, and not more than 16 years of age, on July 31st.

The expenditure on books, apparatus, and furniture (including the expenses of the Stores Department) for the year was as follows :—

	Books and Apparatus	Furniture
Council schools	£114,362 ...	£33,524
Non-provided schools ...	30,550 ..	1,963
	£144,912	£35,487

It may be of interest to mention the following details of quantities of miscellaneous items supplied to the public elementary day schools (provided and non-provided) maintained by the council in the course of a year, viz. :—

Ink (fluid), 11,520 gallons; ink powders sufficient to make 14,400 gallons; 5,000,000 plain copy books; 1,250,000 plain drawing books; 20,000 reams foolscap; 15,000 gross pencil-work books, and 11,300 reams pencil-work paper (pencil-work books and paper being used in place of slates, the use of which has been abandoned); 956 reams cartridge drawing paper; 2,200 reams blotting paper; 65,000 gross pens, and 3,000 gross penholders.

A new scheme of salaries reduced the number of grades of head teachers from five to three, and, while the maximum salaries of £400 (masters) and £300 (mistresses) were not raised, the number of posts of the highest grade was considerably increased. The annual increment was doubled in the case of head teachers of grades II. and III., and improved for head teachers of grade I. (the lowest). The rate of increment and the maximum for assistant teachers were both increased, and when the scheme is in full operation, assistant masters will be eligible to rise from £100 to £200 by increments of £5 for the first two years, and £7 10s. after; and mistresses from £90 to £150 by annual increments of £4. This scale was made applicable to all teachers in London County Council schools, and to all new teachers appointed to non-provided schools.

Existing teachers in non-provided schools were placed on the scale at their existing salaries under conditions which provided that those teachers whose salaries were very much below the salaries allowed by the scale of the late authority, should receive increased annual increments, which would enable them to reach the scale amounts in the course of a few years, and that those teachers whose salaries were in excess of the scale amounts should wait a certain time before commencing to receive increments. The position of the non-provided teachers was thus greatly improved.

It was felt that the method of selecting head teachers for provided schools was unsatisfactory, and a new scheme was prepared. The main features of the scheme were the preparation by the educational adviser, the executive officer, and the chief inspector of an annual promotion list of 225 names (75 of men, 150 of women), after full consideration of the reports on the applications made by managers and inspectors acting separately. Applications for head teacherships are received only from candidates on this list and from existing head teachers.

The council receives its main supply of teachers from the training colleges. The students leave the training colleges in July and begin work, to a large extent, as "unattached" teachers at the close of the following August. Some time necessarily elapses before all these can be permanently placed. Supply and demand would be about equal if the last of the college teachers were appointed to vacancies occurring in the following July. The college supply for the session 1903-4 had, however, approached exhaustion before October, 1903, and the vacancies—places unfilled by permanent staff—increased from that date until the summer of 1904. During the session 1904-5, the supply did not approach exhaustion until November, 1904. In 1905-6, the supply was not exhausted until April, 1906. The prospects of the supply not failing during the session 1906-7 until towards the close of the session are distinctly favourable: it is hoped that the period of "dearth of teachers" may then be approaching a close. Vacancies amounting to nearly 1,500 occur annually; and the distribution of college teachers to fill these vacancies is somewhat difficult. Teachers show marked preference for some districts and marked dislike for others. So great, in fact, is the council's difficulty in securing teachers for certain districts that schools have had to be scheduled as schools of special service, and additional salary, limited to six years, is paid to teachers therein.

Unlike the late authority and the council, the managers of non-provided schools have not depended to any considerable extent upon the training colleges for their teachers. Prior to "the appointed day," *i.e.*, the day on which the maintenance of non-provided schools fell upon the Council, the funds of the managers of these schools did not permit of payment of salaries of well-qualified teachers, with the result that when the schools came as a charge upon the council, more than half the staff of assistant teachers were uncertificated or supplementary teachers. They would appear to have depended largely upon their own pupil teachers who passed the King's Scholarship examination and became uncertificated teachers. The most energetic of these teachers afterwards passed the Acting-teacher's Certificate examination, but it was unusual for a teacher to go through a training college course.

Since the appointed day the status of the staff of non-provided schools has been considerably improved; the salaries offered by the new scale to well-qualified teachers and the additional training college accommodation provided in London will, it is hoped, within a few years, secure for the non-provided schools a staff equal in status to that of the council's schools.

Accommodation.

The following table gives the total accommodation (permanent and temporary) at Lady Day, 1904, and at March 31st, 1905. The accommodation given for the non-provided schools is that recognised prior to the recent survey made by the council:—

	Accommodation	
	At Lady Day, 1904	At March 31, 1905
L.C.C. schools	579,030	588,703
Non-provided schools maintained by the council	211,170	209,208
Other efficient schools	3,951	3,904
Total	794,151	801,815

During the year 1904-5, the council provided additional *permanent* accommodation for 12,564 children. Of these places, 11,238 were provided by means of 14 n and 3,407 by the enlargement of 12 existing sch places were lost, however, by the revision of a tion in 41 existing schools.

Apart from the effect of the survey, the acc of the non-provided schools decreased by 2,009 pl the year. In addition, a reduction amounting places was caused by the survey.

The number of permanent school places L.C.C. and non-provided schools is 10,555 hig the preceding year, leaving the effect of the su consideration. If, however, regard is had to t the survey, there are 56,625 fewer places t previous year.

Attendance.

The following table gives the total figures roll and attendance in the years 1903-4 and 1

	Average No. on Roll.		Average Attendance.		Per A
	Year ended Lady Day, 1904	Year ended March 31, 1905	Year ended Lady Day, 1904	Year ended March 31, 1905	Year ended
L.C.C. schools	550,329	554,576	485,343	494,018	
Non-provided schools maintained by the council ...	207,141	202,508	175,360	172,739	
Other efficient schools ...	3,000	2,825	2,524	2,410	
Total ...	760,470	759,909	663,227	669,167	

The following are the percentages of aver average attendance in the various departme schools in 1903-4 and 1904-5:—

L.C.C. schools—

	Boys	Girls	Mixe
1903–1904	91·6	88·9	90·2
1904–1905	92·4	90·1	91·4

Non-provided schools maintained by the cou

1903–1904	Not available		
1904–1905	89·6	86·3	87·0

Teaching Staff.

The teaching staff engaged in the elementary maintained by the council may be considere different aspects:—

(1) Number and qualifications of teachers;

(2) The salaries of teachers;

(3) The proportion which the number of sch to the number of teachers.

The teaching staff in council schools consiste members on Lady Day, March, 1905, as agains Lady Day, March, 1904. (The numbers at 1904, are printed in brackets.) Of this total 505 head masters; 968 [969] head mistresses; 3, assistant masters, including 71 [57] "supply" and 64 [74] "unattached" teachers; 7,160 [6,72 mistresses, including 274 [151] "supply" tea [365] "unattached" teachers.

There were also 192 [365] uncertificated assistan and 2,388 [2,295] pupil teachers. It will be notic number of uncertificated assistant teachers has siderably diminished, but this is mainly due to th date of expiry of pupil teachers' engagements.

the year 1904-5 there were 81 new appointments teachers, 1,337 new appointments of assistant nd 12 resignations of head teachers, and 517 of eachers.

ds non-provided schools maintained by the council, e at March 31st, 1905, 993 head teachers, and stant teachers of various grades. The number ments dealt with by the council in these schools e year 1904-5 was 29 head teachers and 985 eachers.

ary of head teachers in the council's service om £140 to £400 and assistant teachers from 175. In the council schools the average salary nasters was £290 15*s.* 9*d.* [£291 6*s.* 7*d.*], of esses £208 7*s.* 11*d.* [£207 18*s.* 4*d.*], of assistant 144 16*s.* 8*d.* [£144 0*s.* 2*d.*], assistant mistresses 10*d.* [£108 17*s.* 1*d.*]. As regards non-provided e average salary paid to head masters on July , was £187 7*s.* 7*d.*, and to head mistresses 1*d.*

rage salary of assistant masters, of whom two- re uncertificated, on July 31st, 1905, was 3*d.*, and on August 1st, 1905, £92 9*s.* 9*d.* The lary of assistant mistresses, of whom more than were uncertificated or supplementary teachers, 1st, 1905, was £55 7*s.* 4*d.*, and on August 1st, 3*s.* 6*d.*

rage number of children to each adult teacher schools was 43·6. This average is obtained g the average attendance by the number of the adult staff plus half the number of "supply" ttached" teachers. At Lady Day, 1904, this as 42·2, and at Lady Day, 1903, it was 41·9. seen that the ratio of number of children to the teachers has slightly risen in these three years.

TORY AND CURRENT EVENTS.

Napoleon, in the beginning of the last century, ch a position that he threatened to make Europe f not the world, into a French empire, the spirit lity awoke, at first in Spain, then in Germany, certain extent in Italy, to overthrow the im- nonarchy. This spirit of nationality, based on f race, of religion, of language, was not un- fore, especially in England and France; but had not known it, and her writers were "cos- " in ideas, despising politics and the "meaning- s which arose therefrom. But from Napoleon's spirit of nationality has spread. It has united to the exclusion of "Austria," it has united Italy, rated Belgium from Holland, it threatens almost ar the Austro-Hungarian Empire in pieces. The urope to-day represents the triumph of nation- tes are almost conterminous with nations, and of the Balkan peninsula is due to the passions and Bulgars, of Albanians and Slavs.

spirit of nationality is now winning further Not only in Wales and in Ireland, where it is itself in endeavours to revive in literature which seemed to be dying out before the language redominant partner," but in Asia, much to the ent of those who think of "the East" as the perpetual changelessness, we are witnessing ange new movements of the peoples. Of Japan cely necessary to speak. No newspaper reader ly have escaped hearing of "Bushido," the soul of a nation, and indeed our "far Eastern" ally is being held up to us almost daily as an example for our imitation. But because Japan has been such a success and has achieved victory against a European Power that loomed so large on the western shores of the Pacific, China, the neighbour whose interests are so closely interwoven with those of her island neighbour, is beginning at last to wake, and certain ugly rumours remind us that the Boxer movement is not an isolated phenomenon.

How does this sentiment of nationality affect our British Empire? Does it make for unity? or for disintegration? Wherever "Englishmen" are settled (and it does not seem to matter much if these are Scots or Welsh or even Irish) the desire for unity is strong. Though there is perhaps little loyalty to Parliament or its leading statesmen, there is much enthusiasm for the Empire typified in the Crown. But there are other "nations" within the Empire than the "English," and some of them are beginning to realise their own existence. In South Africa, *e.g.*, besides the conflict of Boer and Briton, there are apparent the beginnings of a movement among the African natives, specially among those who have developed an independent Christian Church. And the movement among the Bengalis, which has lately seized on the partition of Bengal for administrative purpose as a grievance round which to rally the otherwise pointless discontent, creation as it is of our own system of education with its strength and its weakness, is a further illustration of the fact that the British Empire is not entirely British.

THE movement towards democracy is connected closely with that of nationality, but must not be confused with it. A nation may be satisfied with the rule of a "despot" so long as he maintains the local independence against the stranger. But generally the sense of the importance of the individual is developed in a national struggle, and sooner or later there arise successful demands for a share in the control of affairs. This formula explains the history of Europe from 1815 onwards until the establishment of parliamentary institutions. And now all the world seems to believe in "parliaments" as the panacea for political evils. Russians want a Duma, though their country is too big for the organisation of public opinion, and Persia, feeling relief from Russian pressure, is making a "constitution" for itself. There are even folk in India who imagine that a "National Congress" can represent that continent, containing as it does religions and races which, but for the *Pax Britannica*, would soon reduce the peoples living between the Himalayas and Cape Comorin to a state of anarchy.

ITEMS OF INTEREST.

GENERAL.

As several of our readers have recently inquired about the "Teachers' Notes on English History," which have appeared in these columns, and have asked for more, we here print a short statement showing where the previous articles are to be found. The first of a new series of similar papers, practically starting from the terminus of the old series (1688), and dealing with the last two centuries of our history, will be published next month. We have preferred to deal with the later rather than with the earlier periods for two reasons: in the first place the mediæval period has been pretty fully handled in Mr. A. Johnson Evans's series of nine papers in the first two volumes of THE SCHOOL WORLD; and, secondly, we are

under the impression that there is a growing tendency to favour modern rather than mediæval history. At any rate, the substitution of the period 1485–1901 for English history down to 1700 at London Matriculation, the extension of local periods from 1820 or 1832 down to 1867 or 1871, and the apparent adoption of the eighteenth century as a permanent period at the Oxford and Cambridge Joint Board examination, all seem to point in this direction; and we hope that the majority of the history teachers among our readers will approve of our interpretation of these facts.

THE following list of the "Teachers' Notes" may be useful for reference: 1399–1603, introductory, September, 1900; 1399–1509, December, 1900; 1509–1603, July, 1900; 1603–1715, introductory, October, 1899; 1603–1625, November, 1899; 1625–1649, January, 1900; 1649–1660, February, 1900; 1660–1688, April, 1900; 1688–1715, May, 1900. Besides these Notes there have been two lists of topics arranged alphabetically for 1399–1603 in June, 1899; for 1603–1715 in June, 1900. All these back numbers are still in print.

AN examination of the Regulations and Syllabus for the Certificate Examination of the Board of Education, for Teachers in Elementary Schools, 1908, shows that important modifications have again been made in the subjects prescribed. Scarcely a year passes without similar alterations of a far-reaching kind being introduced. The Board seems indeed to be unable to decide what is a reasonable standard of attainment to expect from an elementary-school teacher seeking to obtain its qualifying certificate. A similar spirit of vacillation characterises the regulations governing the Preliminary Examination for the Elementary-School Teachers' Certificate, which are subjected to the same kind of annual alteration. The desire evinced by the Board to prevent its various regulations from becoming stereotyped and antiquated is praiseworthy, of course, but the continual changes are inimical to satisfactory work. The Board ought now to be able to make up its mind to leave its syllabuses as they are for a while, and thus inspire a feeling of confidence, among tutors and others whose business it is to interpret the regulations, that the instructions received will hold good for a few years at least, and that it is worth while to prepare carefully a suitably graduated course of lessons in each subject.

THE irritating habit of constantly changing syllabuses is, unfortunately, not confined in its effects to official documents laying down courses of study for elementary-school teachers. The syllabuses applicable to schools and classes other than elementary have in recent years been subjected to the same pottering policy, and the most recently published "Directory" foreshadows more changes to be made in 1908. In addition to this, teachers in secondary schools are receiving so many "proposed" schemes of work that in self-defence they are being driven to the necessity of disregarding official communications altogether and of continuing to work on their own lines. While it is desirable for the Board to possess an intelligence department to collect the results of carefully planned experiments made in various parts of the country, it is unnecessary constantly to pester teachers with "revised" instructions or new syllabuses incorporating hastily-arrived-at conclusions which will be discarded in a month or two. Education must be an orderly growth, and this persistent pulling-up of a delicate plant to examine and interfere with its roots is likely to be fatal to success. Perhaps the Board is suffering from the fervour of youth, and its conduct may be mellowed by the sobering effects of experience; but in any case the methods it is now following are earning the character of indecision and instability.

IN his presidential address to the National Feder Class Teachers held at Nottingham, Mr. R. T. dealt with the unattractiveness of the elementar class-teacher's work. He said: "Conditions of are far from good, prospects are not bright, and seldom commensurate with the labour required to an entry into the ranks of the 'qualified.' A tea certain social obligations. He cannot afford to his tailor or shoemaker, he cannot live in any ho if he is to be an exemplar he should, in return services not only to the locality but to the State, be with the wherewithal to keep up his status as a of an honourable profession. As conditions have the past, there is now a dearth of certificated and unless inducements of the right kind are such as the withdrawal of irritating regulations improvement of the prospects of the class-teache is very little hope of securing an adequate staff primary schools. Since 1876 the number of chil the school registers has increased 106 per cen number of girl pupil-teachers has increased 6 p but the number of boy pupil-teachers has decre per cent. The giving of scholarships and bursa not counteract the evil that has been done. The of teachers will now be class-teachers for life, an there is a prospect of a reasonable reward being g years of faithful service, sufficient desirable enti not be forthcoming to make up for deficiencies supply future needs. As it is, the section which is lacking in qualifications for teaching has increas 5,210 in 1890 to 18,296 in 1904. This is a serious for unless provincial authorities, either volunt under compulsion, make such radical alterations regulations as to secure for their service teachers qualified as those in better governed areas, there be this waste of the nation's wealth; for undoubted children leave these inadequately staffed schools those attributes necessary to carry them on the success."

THE president in his address also spoke question of the staffing of primary schools Mawbey, quoting from recent statistics of the E Education, declared that of the teachers employ 46·5 per cent. are qualified to teach. The re 53·5 per cent. consists of a heterogeneous colle successfully vaccinated and other variously qualif unqualified practitioners. The blame for this affairs lies at the doors of those education authorit employ and encourage the existence of unqualified t The crux of the whole question is, however, that t fession is not attractive. In spite of some slight i ment in recent years, much remains to be done bel ideal of the Federation can be realised, viz., schools with thoroughly efficient teachers in charge of cla manageable size.

THE Girls' School Music Union, a society which its object the advancement by theoretical and p work of music in secondary schools for girls, ha pleted two successful years of existence. Lecture cussions, concerts, and other meetings for teache students are arranged from time to time. The provides a room in New Bond Street for the use members, and other facilities for the study and p of music. The autumn meeting of the union wa

he Notting Hill High School on October 6th, when address, with illustrations on the piano, was given he president, Mr. W. H. Hadow, on "The Principles Melodic Form." A short discussion followed, and after- ds a concert was given by members of the society.

HE fifth annual meeting of the North of England ference will be held at the Central Baths Hall, Brad- , on January 3rd, 4th, and 5th, 1907. The subject of nited conference in the morning of January 4th will he best curricula for secondary schools, and the dis- ion will be prefaced with papers by the Rev. W. H. ling, Mr. R. Lishman, and Miss McCroben. The nd united conference on January 6th will be concerned the development of technical education in a large ufacturing centre. Papers will be read by Prof. nock and Principal J. H. Reynolds. Sectional meet- have been arranged in a great variety of subjects, ding the reforms needed in elementary education, the nd abuse of public examinations, the training of the r sense in children, systematic courses in evening ls, manual training schools (American and English), hysical condition of children, the teaching of geo- y, and the teaching of drawing in Paris primary, dary, and apprentice schools. Tickets of admission ree, and can be obtained on application to one of onorary secretaries, Mr. F. Stevens, the Rev. W. H. ng, and Mr. T. Garbutt, Education Office, Manor Bradford.

are officially informed that the Government has ed to appeal in the matter now commonly spoken of e recent West Riding judgment, which decided that ation authorities are not obliged to make any con- tion out of the rates toward the cost of giving minational instruction in non-provided schools. We rstand that this decision is due to the necessity which for clearing up, if possible, some of the numerous s of difficulty which have arisen consequentially upon judgment. It appears that, owing to the particular of the judgment, local authorities find themselves in t doubt as to whether certain forms of expenditure or will not now be legal, and several difficult issues inevitably raised in addition to the one specific point was alone decided, technically speaking, by the judg- t. Both the Board of Education and the Local Govern- t Board have been appealed to by local authorities in parts of the country for guidance or advice, and, as ner of these departments has any authority to pro- nce on the matters in question, local authorities' ad- istration is in danger of drifting into chaos, and vidual members naturally fear surcharge. It has thus me imperative to endeavour to have the whole matter red up in its various ramifications, with as little delay possible.

a recent issue of the *Morning Post* Prof. M. E. Sadler the oft-repeated question: What is a secondary school? shows that it still remains unsolved. He quotes the ition of a secondary school supplied by the Board of cation, and proceeds to demonstrate by recent statistics facts are against the theory of sixteen being the mal minimum leaving age of a secondary school. Prof. ler maintains that these statistics show "that we must berately lay our plans to devise courses of secondary cation which will be intellectually appropriate to the ds of those who may leave school at fifteen or fifteen ."

Prof. Sadler's own views as to how schools should be classified may be gathered by the questions he propounds in concluding his article:—"Why should not all education up to twelve years of age, in whatever type of school or department of a school it may be given, be classified and inspected as primary? And why should not the various courses of general education from twelve years of age onwards (whether twelve to fourteen or fifteen or twelve to seventeen or eighteen, or to any intermediate point) be recognised collectively as secondary, but under that general name be re-grouped according to their duration and, to some extent, according to their differing subject-matter?" The adoption of some such course need not mean the inspection of all large elementary and every secondary school by two separate sets of inspectors—there is no need to draw a sharp line between the province of the elementary- and the secondary-school inspector. It is quite clear that a simplification of the present classification of schools would greatly assist parents, and the public generally, to understand our educational system.

Attention was directed in the October number to the series of articles in the *Times* on public-school education. The seventh in the series, by Mr. A. C. Benson, discussed some of the problems of form teaching. Great stress is laid upon the importance of the personality of the teacher. Kindness, strictness, and liveliness are the three qualities most important in combination. If a man is considerate and good-humoured when all goes well, and excessively disagreeable when things go wrong, he is generally a good teacher. As an aid to effectiveness in teaching, Mr. Benson recommends the form master to cultivate a taste for general reading; variety is a tremendous force in dealing with immature minds. These are only a few of the points of a most readable article.

In an article on "Engineering" in the series, the headmaster of Felsted School summarises the conclusions arrived at by the Institution of Civil Engineers, and printed in our issue for last June. These include the following opinions:—(1) a boy should not begin specialising until he is about seventeen years old, and has passed a leaving examination; (2) he should study at school advanced history and geography, essay and précis writing, English literature, colloquial French and German, a little Latin (up to the age of fifteen), mathematics; (3) he should have a general knowledge of physics and chemistry; (4) devote special attention to drawing and mensuration; (5) as a recreation, acquire skill in carpentry, turning, and surveying. Taking Felsted as a type, an attempt is made to show that these requirements are more than met in the case of public-school engineering students.

The Rev. C. Eccles Williams (Summer Fields, Oxford) in another article discusses the question of entrance scholarships and cram. On the latter point his remarks are eminently sound. For the ordinary bright boy to attain to scholarship standard without any pressure it is all-important that he should be properly taught from the time he enters the schoolroom, and not, as too often happens, be allowed to waste the valuable years between nine and eleven in learning how not to learn. Given this steady preparation, "cram" is unnecessary. With regard to the actual working hours, the writer furnishes some interesting statistics, based on the curriculum of a school which prepares for public-school entrance scholarships. The older boys' *maximum* working hours are 36½ per week, including Sundays; the younger boys', 30½. The hours of sleep are, respectively, ten and eleven per day. Put in

another way, it is shown that out of about 100 waking hours per week, 36 are devoted to "work," 64 to meals and recreation.

THERE seems every probability that the ideal great co-educational public school described by the Rev. Cecil Grant in our issue for March last will shortly be an accomplished fact. Suitable premises and grounds have been secured for the purpose at St. George's School, Harpenden, and the new institution will be opened in January, 1907, under the headmastership of Mr. Grant himself, who is leaving Keswick School to take up the new work.

WE have received a copy of *The Young Citizen*, a new penny illustrated monthly magazine for boys and girls. Amongst some of its features are monthly nature notes and anecdotes of plant and animal life; "red letter" days connected with the chief events in our history; news of geographical, commercial, or historical interest; music; the roll of honour, dealing with recent deeds of heroism. Particulars are also given of a scheme involving the distribution of 200 book prizes as the result of competitions in handwriting, drawing, &c. *The Young Citizen* is published by Edward Lloyd, Ltd., 12, Salisbury Square, London, E.C.

THE question of the employment of women in schools has caused much discussion in Germany. At the Munich conference of the German Teachers' Union a resolution was passed in favour of the employment of women as well as men in the public schools, a rider being added that girls' schools should not be under the entire, or the preponderating, influence of women teachers. The number of women teachers has been increasing rapidly in Germany; in Elsass they now number nearly half the staff, and the men are beginning to see their occupation threatened. The difficulty is caused by the necessity of earning a livelihood that is being forced upon women. It is quite as much a social difficulty as a pedagogic one. A number of women hope to reach the altar through the school. But if they strive to do the work of a man they break down in health. Apart from questions of physique, the training of women teachers has been neglected in Germany. It has often been left to religious communities, and one reason for the opposition to the woman teacher arises from a desire to curtail the influence of the Church. The German considers that each sex should join in training the children. If a girl be taught at the high school by women only, she never comes under the sterner influence of the man. In some respects, and at certain ages, a woman is a better guide for a girl; but the woman teacher is not a mother and the school is not a home.

DR. ULLMANN, in his book "Zur Lehrerinnenfrage" (B. G. Teubner), passes a more favourable verdict. He says that man has underrated the teaching power of woman, whose influence, even when untrained, is very marked with young children. So long as a child's imagination is active, the best teacher it can have is a woman. In higher classes where abstract matters are more prominent the man, he thinks, is more efficient. But this does not condone, in his eyes, the action of the men in the Berlin Gemeindeschulen. Their assumption that they have a prescriptive right to the upper classes of girls is due rather to conceit than merit. Qualitatively, Ullmann thinks a woman's work as good as a man's, but he would give her less to do in the week.

AN examination for ninety Assistants of Excise will be held next December. The subjects are handwriting, English composition and orthography, arithmetic, and geography; the age-limits are eighteen and t Assistants of Excise receive a salary commenci a year and rising by annual increments of £ They also receive an officiating allowance of when actively employed. The new scheme (s. p. 193) for this examination comes into f December 31st, 1906.

AN examination for fourth-class clerkships London County Council is announced for the pres Part i. will be held on November 12th, 13th, part ii. on November 26th and the following fees must be paid on the 1st and 22nd respect subjects of examination and the prospects are p. 109 of the present volume.

THE London County Council also announces a tion for appointments in the minor establishm the rates of pay are:—Lower section, 15s. to 4(upper section, 40s. to 60s. a week; rising in e annual increments of 2s. 6d. a week, subject ficate as to conduct and work from the h department concerned. Promotion from the lo upper section will take place only on a resolu Council. Candidates must be British subjects, be over fifteen and under seventeen years of latest date for receiving application to sit for th tion, and must be free from physical defect of The first year's service is probationary. The examination are handwriting, orthography, Er position, arithmetic, English history, geography intelligence test, and either French, or Germ mentary experimental science, including practic drawing. The particulars given of the general test are:—"Data of the problem will be supp certain time will be allowed for the study of after which questions will be asked of the p with." There will also be examinations in sho in typewriting, including stencil work, and all with a knowledge of these subjects should examinations, as there are some positions in th service where shorthand and typewriting ar The marks gained in these subjects will not count in the general competition. The first e will take place on January 22nd, 1907, and on ing day, if necessary. Applications must be m printed forms, which can be obtained "by fo stamped addressed envelope to the Clerk of t or on personal application" at the County H Gardens, S.W., and must be returned by Dece 1906. "The Council reserves the right of se appointment any candidate out of the order such candidate has shown in his examination sp fications in any particular subject requisite for ment."

THE syllabus of subjects for the examinations new regulations (August issue, p. 356) for juni ments in the Admiralty and War Office and chequer and Audit and Army Accounts Depart now been issued. Mathematics i. includes alg metry, and trigonometry; Mathematics ii. incl and mechanics; while Mathematics iii. requ knowledge of solid geometry, differential an calculus, co-ordinate geometry, and rigid dyn French, German, Latin, and Greek, where the defined in the same way for classes ii. and standard of questions in class iii. will be high class ii. In class ii. there will be a general

istory from the Conquest to the death of Queen In class iii. 2,000 marks will be assigned to istory, and 2,000 to European history. Under r, candidates may select one of the periods 1066–485–1901; under the latter, either A.D. 800–1519 901. In class iii. chemistry includes the outlines c chemistry with the method of analysis and d of arriving at the formula of an organic com- n class iii., to the physics for class ii. are added advanced parts of heat, light, electricity, and , together with sound.

SCOTTISH.

nual general meeting of the Educational In- Scotland was held this year in the McEwan inburgh University. In the absence of Sir Turner, the principal, Prof. Darroch, on behalf niversity Court, welcomed the Institute to the , and expressed the hope that for all time to would continue to meet within the precincts of rsity. In the course of his retiring address, the Mr. Service, Coatbridge High School, outlined provisions of an ideal Education (Scotland) Bill. Advocate's plan for the retention of the parish it of area met with scant shrift, but approval to his plea for an area specially delimited for l purposes, provided the principle were laid such an area should be of a size to provide elf facilities for both secondary and primary

ort of the Institute's parliamentary committee estion of direct parliamentary representation led onged discussion. The committee submitted a proving generally of the proposal, but recom- hat no steps be taken to make it effective, in he financial difficulties involved. This finding eet with much favour, and in the end a motion d instructing the general committee to take the preliminary steps for the direct representation titute in Parliament. The general body has thus ch greater courage than the committee, and it teresting to watch developments. The committee hat members, especially lady members, will not increased subscription that will be necessary, he general body of delegates maintain that what as done, Scotland can do. *Nous verrons.*

making of associations there seems no end, yet able to justify their creation so completely as formed "English Association," which was suc- et a-going at a representative meeting in Edin- iversity, over which Prof. Saintsbury presided. t of the association is to afford opportunities urse and co-operation amongst all those interested n language and literature; to help to maintain t use of English, spoken and written; to pro- due recognition of English as an essential n the national education; to discuss methods of English and the correlation of school and uni- ork; to encourage and facilitate advanced study n language and literature. The new association ably be affiliated in some way to the parent n in England, but for all practical purposes it independent body.

atercentenary celebrations at Aberdeen University he greater part of a week, and from beginning to end there was not a single hitch. Town and gown forgot old-time rivalries and antipathies, and worked together in complete accord. The occasion was certainly a notable one in many ways. The quatercentenary of any institution is rare enough to call for special notice, but in the case of Aberdeen University it may be said to be the quatercentenary of the educational birth of the whole north-east of Scotland. The impetus given to learning by the founding of the University 400 years ago has gathered momentum down the centuries, and it is no exaggeration to say that the north-eastern counties have a passion for education that marks them off from all other parts of Scotland. No wonder, then, that the whole populace felt a keen personal interest in the magnificent series of functions that marked the occasion, and gave themselves up with quite a southern abandonment to the enjoyments of the hour, or, rather, week.

THE visit of the King and Queen on the closing day to open the new buildings connected with Marischal College rounded off the celebrations in an ideal fashion. The quadrangle of Marischal College, where the ceremony took place, was filled with a crowd of more than 4,000 people, representative of the intellect and learning of every civilised country. The new buildings were not unworthy of the occasion. Picture the Houses of Parliament in dazzling white, and some idea may be had of "this dream in granite," as someone called it. This refractory medium was probably never before fashioned to such graceful purpose. The chief figures after the King and Queen were the Chancellor, Lord Strathcona, the principal, Dr. Marshall Lang, and the Lord Rector, Sir Frederick Treves. All of these were indefatigable in their efforts, and to them the chief credit must be given for the complete success of the whole proceedings.

THE Association of Secondary Teachers in Public Schools (Modern Branch) has forwarded to the Secretary for Scotland and to Mr. Struthers, Secretary of the Education Department, a letter protesting against any change of date in the leaving certificate examination. The present date, it is contended, gives an educational session interrupted only by two or three short vacations, so that the work from September to June progresses without any serious break in the continuity of study. To hold the examinations at Easter would only give a session of seven or eight months, and the attendance after the examination would tend to fall off considerably. The fact of Easter being a movable date, and that an Easter vacation is not universal in Scotland, are additional arguments advanced against the change. The overwhelming weight of opinion, so far as yet declared, is strongly against the proposal, and it is probable that the Department itself has not foreseen all the disadvantages inherent in its scheme.

THE annual meeting of the Association of School Board Clerks and Treasurers was held this year in the School Board Offices, Glasgow. Mr. Robert Kerr, Hamilton, who presided, speaking of the Provision of Meals Bill, said that the intention of the Bill was good, but the charitable and other agencies throughout the country were able to undertake all that was asked for by the Bill, and it would be a mistake to set up new and costly machinery for the purpose. In regard to the circular issued by the Department proposing a change in the date of the leaving certificate examination, he said that the alteration would involve a reclassification of school work. The attendance between April and June would be seriously affected, and the grants would be correspondingly decreased.

FOR the L.L.A. examination in May last, 989 candidates entered for examination at 73 centres, as compared with 975 candidates in 1905; 321 candidates entered this year for the first time as compared with 310 last year; 89 students have this year completed the requisite number of subjects, and will receive the L.L.A. diploma of the University; 1,442 papers were written on the various subjects, and of these passes were obtained in 785 instances, and honours in 179.

THE annual general meeting of the Parochial Schoolmasters' Association was held in the Royal High School, Edinburgh. The members forming it are a fast diminishing band, and an increasing pathos attaches to each annual meeting as the gaps in the ranks of the "old guard" become yearly more apparent. The secretary stated that 80 "old parochials" were still in active service, and the total membership was 107.

THE conference of the Scottish District Unions, which are affiliated to the National Union of Women-workers, was held this year in Aberdeen. The Countess of Aberdeen presided, and in course of the sederunt papers were read dealing with the work of women in public capacities. Mrs. Ogilvie Gordon contributed an exceedingly interesting and valuable paper on the subject of a "Local and International Educational Bureau." The aim of such an institution in industrial centres would be to give full and accurate information regarding the various employments in the town and surrounding district, and to afford guidance to parents as to the best educational preparation for any selected line of work. Valuable work in this direction had already been done by the Scottish Council for Women's Trades, which had issued a pamphlet giving full details of the various modes of employment for girls, of the remuneration attaching to each, and of the best preliminary training for each. Such education bureaux, by keeping in close touch with the employment bureaux in large cities, would be able to divert young people from the overstocked trades and professions to those affording greater opportunities of advancement. Mrs. Ogilvie Gordon's scheme is not intended to displace the employment bureaux already in existence, but to provide information of a practical nature before the time for employment begins. The scheme received strong support from the various speakers, and on the motion of Lady Aberdeen it was agreed to bring definite proposals for the establishment of such bureaux before the next meeing of the union.

IRISH.

THE Exhibition and Prize List of the Intermediate Board for the present year was published about the middle of September, and may be summarised thus:—For boys, in the classical course 15 exhibitions were awarded in the senior grade, 13 in the middle, and 23 in the junior; 9 prizes were awarded in the senior grade, 7 in the middle, and 18 in the junior; making a total of 51 exhibitions and 34 prizes in classics. In the modern literary course (Division I., including Irish) 7 exhibitions were awarded in the senior grade, 24 in the middle, and 47 in the junior; 5 prizes in the senior grade, 14 in the middle, and 55 in the junior; making a total of 78 exhibitions and 74 prizes. In the same course (Division II., excluding Irish) 2 exhibitions were awarded in the senior grade, 3 in the middle, and 9 in the junior; 2 prizes were awarded in the senior grade, 3 in the middle, and 7 in the junior; making a total of 14 exhibitions and 12 prizes. In the mathematical course 12 exhibitions were awarded in the senior grade, 18 in the middle, and 13 in the junior; 12 prizes were awarded in the senior grade, 15 in the middle, and 12 in t making a total of 43 exhibitions and 39 prize experimental science course 15 exhibitions wer in the senior grade, 26 in the middle, and 52 in t 13 prizes were awarded in the senior grade, middle, and 36 in the junior; making a total of tions and 71 prizes.

FOR girls the figures are:—In the classical c hibition and 1 prize, both in the junior grad modern literary course (Division I.) 5 exhibiti senior grade, 9 in the middle, and 21 in the juni in the senior grade, 5 in the middle, and 18 in making a total of 35 exhibitions and 28 priz same course (Division II.) 13 exhibitions in grade, 9 in the middle, and 24 in the junior; t the senior grade, 11 in the middle, and 18 in making a total of 46 exhibitions and 39 priz mathematical course 1 exhibition and 1 prize the three grades. In the experimental scie 4 exhibitions in the senior grade, 7 in the mid in the junior; 4 prizes in the senior grade, 6 in and 6 in the junior; making a total of 21 exh 16 prizes.

THE grand total of awards is:—385 exhibit 279; girls, 106; and 317 prizes: boys, 230; The exhibitions are of three classes: in the s £40, £30, and £20; in the middle, £25, £20 and in the junior, £15, £10, and £5. As the from £3 to £1, there is a very narrow line of in the junior grade between exhibitions and it is not surprising that objection has beer exhibitions of only £5, which are insufficien year's school-fees.

THE chief criticism of this year's results turn Board's interpretation of Rule 36, by which, if passes in all but one of the necessary number and obtains between 25 and 30 per cent. in the allowed a pass if the general average is mo The Board has decided that this shall not apply literature and composition. This is a startlin as it did so apply last year, and there is not rules to show that English is excluded from its As 1,862 boys failed in English, many of w certainly have passed but for the Board's matter is serious, and it is not surprising that tion of Catholic Headmasters has determined t proceedings against the Board's decision.

THE results of the system of courses fail to g faction either to Catholics or Protestants. Th desire its abolition altogether, while the Scho Association points out that its effect has been t classical and mathematical teaching in girls' girls naturally choose the courses in which i to obtain rewards. A memorial of the latter shows that whereas in 1899 and 1900 all gi exhibitions (with one exception) took Greek mathematics, in 1906 there were twenty-six who took none of these subjects.

THE Committee of the Christian Brothers ha a memorial to the Board dealing with a large points in which they desire changes. These marking of the English paper, the low value the exhibitions, the rule compelling students Irish (except in the preparatory grade) to tal language besides in addition to English, the set

r in experimental science to students of different
ıe absence of reasons for continuing the special
Greek and German, the low results fees in the
d preparatory grades, the necessity of a special
ıl course, the neglect of pass subjects caused by
vhich limits the number of subjects counting for
s, the desirability of introducing manual instruc-
all schools, the lateness of the publication of the
rom the examiners' reports.

epartment of Agriculture and Technical Instruc-
issued an important circular letter amending the
s for the administration and distribution of grants
ary schools issued in June, 1905. It is believed
hanges will be of advantage to schools, and will
cilitate the arrangement of the school time-table.
ges are in Regulation II., Sections 5 and 6, for
v sections 5, 6, and 7 are substituted. (5) The
of instruction, first year, second year, third year,
r, will correspond with the first year, second year,
of payment. (6) Grants will be payable in re-
ıe attendances of any one pupil for not more than
in the syllabus of the first or second year of the
y course, or of the third year of any special
for not more than one year of the syllabus of
ı year of any special course, but payments will
ade for any one pupil for more than five years
) Grants will not be paid in respect of pupils who
ted by the Department's inspectors as unfit to
ıe course in which they have been receiving
ı.

WELSH.

ortant movement has been begun at Cardiff for
r education of the working classes. The new
t in S. Wales comes "from within." It is an
o organise all the forces of the democracy to
nd for higher education for the workers. The
at the Cardiff conference included representatives
Trades' Councils of Cardiff and Newport, the
Federation of S. Wales, the Cardiff Ruskin
the Cardiff Co-operative Society, Labour Co-
ip Association, the Co-operative Wholesale Society,
a Industrial Society, the Amalgamated Society of
Servants, and numerous educational authorities
tutions, including the University College of S.
The first resolution was to the effect that the
e was of opinion that the higher education of
le in S. Wales should be promoted by the forma-
sectional Workers' Educational Associations in
centres. One of the workers declared: "It is
nation to educate us." Principal Griffiths, how-
phasised the real essence of the movement on
nd that it embodied the principle of self-help, and
that all great movements have sprung from
effort. A committee was appointed consisting
entatives of county and borough education com-
of trade unions, and of educational institutions.

F Town Council has passed the recommendation
ducation Committee "That the Principal of the
eachers' Centre be instructed to make provision
eaching of Welsh in the P. T. School, and that
e made an obligatory subject for the entrance
ions to that school on and after May, 1908."
ıments used against the resolution were that this
ad to the exclusion of French, "the language of
y," and that its adoption would prevent Cardiff
coming a starting-point for the promotion of
teachers outside of Wales. On the other hand, it was urged that the Council had made strenuous efforts to get Cardiff recognised as the Metropolis of Wales, and ought, therefore, to be proud to be leaders of Wales in any movement of a national character. Further, Cardiff would thus do its share in producing teachers eligible for any appointment in Wales. The vote for and against the resolution was equal, 17 for and 17 against. The Lord Mayor gave his casting vote in favour of Welsh being made obligatory at the Pupil Teachers' Centre. However, immediate notice of motion was given to rescind the resolution.

Swansea Town Council has sanctioned a rate to produce £17,954 for the purpose of the Education Act for the half-year ending May 31st next. The sum does not include any money for the maintenance of the voluntary schools from the rates, and a motion to do so was negatived, only three members of the Council voting in its favour.

The Monmouthshire Education Committee has decided to recommend the purchase of the present Poor Law Schools at Caerleon, property now used as schools, residence, hospital, and garden, at the price of £4,000, for the purpose of establishing a training college for teachers.

The Bangor Normal College is one of the colleges established by the British and Foreign School Society. A proposal is to be placed before the subscribers for increasing the accommodation from 70 to 150 students. A further movement, however, is contemplated, viz., for the transference of the college from the subscribers to the local education authority. It is suggested that the college should then be increased so as to make as large a provision "as may be thought reasonable" for all the wants of Wales. The difficulty naturally will be, if the institution is in the hands of the Carnarvonshire county authority, to induce S. Wales to send its present large quota of students, and, on the other hand, to satisfy the Carnarvonshire ratepayer in paying for the expense of students from other parts of Wales. The annual report states that 200 candidates applied for admission during the year. Of this number, ninety-five Welshmen were successful in passing the scholarship examination: first class, nine; second class, thirty; third class, fifty-six. "This result suggested two comments, viz., that the provisions made for the education of teachers before entering a training college were inadequate, and that there was need for increased accommodation in the college if it was to cope at all adequately with the demands which Wales was making upon it." One point is clear. The spirit and vigour with which the new principal has entered on his work will secure rapid progress in the future, if only a satisfactory basis is provided for the college in the organised system of education in the principality.

It is proposed to summon a public meeting at Cardiff to consider the advisability of organising a pageant on national lines, to take place at Cardiff in 1908, so as to illustrate the history of the Welsh nation. The following tableaux have been suggested:—(1) the Ancient Britons; (2) the Roman period; (3) the Arthurian legend; (4) the Norman invasion; (5) Owen Glyndwr; (6) the story of Llewellyn; (7) the triumph of Henry VII.; (8) the Tudor period; (9) the Royalist and Cromwellian period; (10) a procession representing Carnarvon, Conway, Harlech, Rhuddlan, Aberystwyth, and other historic castles in Wales; (11) Welshmen in foreign lands; (12) a grand final tableau. The pageant would extend over one week.

RECENT SCHOOL-BOOKS AND APPARATUS.

Modern Languages.

Phonetic French Syllabaire for Schools. By S. Smith. viii.+80 pp. (Hachette.) 1*s.*—There is much good work in this *syllabaire*, yet we fear Mr. Smith has made a serious mistake in employing a system of phonetic transcription little known in England. It would have made his book much more acceptable if he had adopted the international alphabet, which is now getting well known in this country, and has the advantage of not being applicable to French only, as is the one used in this book. To some of Mr. Smith's statements we take exception. Thus it is obviously misleading to say that "breath issuing from the lungs through the mouth without vibration of the vocal chords produces whispering," for it need not produce any sound at all. The production of a diphthong in Engl. *see* is not due to careless pronunciation. In explaining the pronunciation of the "semi-consonne *y*" (the sound after *i* in *fille*), Mr. Smith says that if the breath-channel for *i* is reduced, being narrowed to the smallest proportions, "voice" becomes impossible. It is hard to understand what is here meant by "voice"; we usually apply the term to the vibration of the vocal chords, and this is independent of the size of the breath-channel. In its usual sense it appears, *e.g.*, on p. 53. Such expressions as "dry and clean in quality" (applied to French *k*) are better avoided. We have noticed few misprints. On p. 65, fourth line from bottom, *these* should be *three*.

Fables de La Fontaine. Avec notes, exercices, et leçons de versification. Par Thomas Keen. 177 pp. (Dent.) 1*s.* 6*d.* net.—This is an interesting edition of forty-one of the famous fables. The only criticism we can make is that the text is surrounded by so many additions that it can with difficulty be discovered. It is a criticism that is often made on edited books; the obvious answer is that a teacher can always omit what he deems unnecessary. At the bottom of each page are notes in French on the unusual words in the text; after each fable are exercises to be answered in French; and after most a *rédaction* or essay to be written, with hints as to its composition. In addition there are short lessons on French versification—a subject that is usually neglected altogether in English schools. Now and again we are given extracts from Taine and other writers who have written on La Fontaine. There are useful appendices on syntax and the difference between the fabulist's French and the usage of to-day, and a sufficient vocabulary. The book has evidently been a labour of love with Mr. Keen; and he might add an introductory note telling other teachers how he uses it himself.

Galland, Histoire d'Ali Baba. Edited by W. G. Hartog. 79 pp. (Rivingtons.) 1*s.*—This book is edited on the same lines as others already noticed, except that in the exercises rather more attention is given to the grammar; otherwise the exercises are rather scanty in proportion to the length of the text. Misprints are not as rare as they should be; thus we have noted *delibéré*, *decouvrir* (p. 18), *etait* (p. 21, p. 32 [twice]), *jusqu'a* (p. 22), *èchappa* (p. 23), *apres* (p. 24), *á* (p. 31), *grace* (p. 36), *e'est* (p. 36), *addressant* (p. 42), *tiré rapporté* [?] (p. 43), *réligion* (p. 47), *cimetiére* (p 54). The vocabulary is not quite complete.

Le Livre des Jeux. By A. C. W. Tillyard. 63 pp. (Blackie.) 1*s.*—The booklet is gracefully introduced by *Miss E. P. Hughes.* It contains twelve games suitable for fairly young children, by playing which the some fluency. Such means of applying the gra vocabulary acquired in lessons are to be comm many a teacher of French will therefore be g suggestions contained in this little volume.

French Historical Reader. By H. N. Adair. pp. (Bell.) 1*s.* 6*d.*—A good idea, well carried text has been selected from many sources, a simplified. Some English notes are also sup are brief and to the point. The book makes a v ing reader. It is all the more to be regrette illustrations are not better, and that the vocab complete. If it was thought necessary to give of *anglais, camarade, compagnon,* &c., there is reason why such words as *bonheur, boulet,* should be omitted.

Lesage, Turcaret. Edited by W. A. R. Ker pp. (Heath.) 1*s.* 6*d.*—It is convenient to have of *Turcaret*, one of the best plays written in th of the eighteenth century. The editorial wor ever, disappointing. The introduction is writt shod English, as is too often the case in school hail from the other side of the Atlantic. It tired" (if we may adopt an Americanism) to a statement as this: "But what sub-liminal in [the delicate psychological play of Marivaux] had on the practical mind of the independent perhaps problematical." In the notes not enoug is given to peculiarities of eighteenth-century dic

Classics.

The Aeneid of Virgil. Translated by E. Fair with an Introduction and Notes by E. M 2 vols. 2*s.* 6*d.* each. xviii.+352+363 pp. T Greek and Latin Classics. Edited by G. L. Dic H. O. Meredith.—Mr. Fairfax Taylor's trans already appeared in the "Temple Classics," an reviewed it in these columns; it is here printed fashion of the new series, with the Latin te opposite page. The translation is in the Spenseri it is close and faithful and agreeable to read indeed, of much skill. We do not think that at all represents the rhythm of Virgil; it can enough, but it is too slow for anything but a t tative kind of verse. On the other hand, t metre is free from objections. Readers will, we pleased with the translation on its own merits, the fault which we have indicated. There is no text is used of the original. Mr. Forster's in gives a sketch of the poet's life and works, wi dose of literary criticism. We do not at all a him that the structure of the *Aeneid* is loose. so to persons who read a book at a time, but a reading gives a different impression. The poet' dinary skill in character-drawing, seen in the de of the character of Aeneas, is not touched on it is very generally missed by readers, who ar for something else, but it is subtle enough fo Eliot. The scenes in Olympus, too, are ofte delicate comedy. Mr. Forster's English style is less, as may be seen from the following sentenc art of Virgil seems the wrong way up—if we ass the art of Homer is up the only right way." T explain mythological and other allusions. Each has a frontispiece: one an imaginary portrait o the other a statue of Augustus.

h's Lives: Aristides, Marcus Cato, Demosthenes, Lycurgus, Numa. Translated by W. R. Frazer. New Classical Library. Edited by Dr. Emil (Swan Sonnenschein.)—Because we welcome in any reasonable form, we are glad to see this slation of the Lives; but, as we said in reviewing volume, the translation has no special distinc- recommend it. We much prefer a reprint of vith his mistakes (they are not many) corrected otes if desired; but they really do not matter, his style does. How commonplace Mr. Frazer's ve will show by a few examples. P. 170, "'You, are the only women who rule your husbands.' plied, 'Yes, because we are the only women who n.'" Obviously the first sentence should read ur men"; otherwise the point is lost. On the ge, "in a state of nature" is used instead of "; p. 175, "expire beneath the lash" for "die e lash"; p. 178, "die gamely" for "die game." e a few examples taken almost at random.

h's Lives of Coriolanus, Caesar, Brutus, and in North's Translation. Edited, with Introduction s, by R. H. Carr. xxxvi.+280 pp. (Clarendon 3s. 6d.

h's Life of Coriolanus, in North's Translation. with Introduction and Notes, by R. H. Carr. 3 pp. (Clarendon Press.)

are admirable books—they are one book indeed, *lanus* being the single life without the other three, own proper notes and the same general introduc- he text of the Lives is printed from the 1595 n the ground that this is more likely to have been Shakespeare than the first of 1579. It is well at the first editions of sixteenth-century books are better than the later editions, because the later always revised by the author, but were reprints er the charge of the printer. In the case of North, no knowledge of the edition of 1595; but we know of 1631 is very carelessly printed, some passages nonsense. Mr. Carr has collated the four Lives in and 1595, and finds only trifling differences, most differences in spelling. We are content to accept lict, and to assume that the two are practically . We do not, however, agree in the assumption kespeare is more likely to have used ed. 1595, at the other edition was in existence, and he may ve bought that. There is no evidence that North he later edition. In this reprint the spelling is d, but old forms have been kept—the right prin- an editor, we hold. The notes are very full, and e cost a world of work. References are given to f Shakespeare whenever he borrowed the subject- nly, and full quotations when he seems to have North's language. The literary student will thus for the first time, to estimate Shakespeare's debt . In the introduction the same subject is dealt general way, and stress is laid on the scenes and s due to Shakespeare's creative genius. Justice lso to Amyot, from whom North translated very It is a healthy sign that these Lives have been re- and we hope that in future Plutarch may be read in schools. This scholarly book is a real he student of English literature, whether young

Latin Syntax. By J. A. Stevens. 56 pp. 8d.—This book does not seem to us to be any ent on others. It is diffuse, and not always clear. Thus, extent of time and space can best be placed together, as due to one principle and having one construction; but here we have *Duration and Point of Time* in one section, then *Motion to, Motion from, and Rest at* in one section, then *Measure of Space* by itself. Later, when we come to the cases, the *Accusative Case* contains no mention of either space or time. The *Ablative Case, Comparison, Price and Quality*, and the *Ablative Absolute* are all found as parallel sections, whereas the last three are subdivisions of the first. Why, again, is *Quality* put with *Price?* The genitive is included in this section. But there is no principle of order in this book, and it does not justify its existence.

Dies Romani. Short Readings from Latin Literature. Compiled by W. F. Witton. viii.+119 pp. (Arnold.) 1s. 6d.—This book contains sixty-two extracts, each complete in itself, taken from a large variety of authors—Cicero, Horace, Ovid, Catullus, Martial, Caesar, Suetonius, Livy, Virgil, Pliny, and including, we are glad to see, a few excellent dialogues from Erasmus. The selection is good, and the completeness of the pieces places the book above the usual collections of "unseens." But this book is not meant for unseen translation; we see, to our horror, that this is meant to form the whole Latin reading of the average boy, who is expected to spend "three or four years" over it, and then to do no more. It is thus, in intention, a sort of glorified London-matriculation-book. For a First Reader, however, it is well adapted.

English.

On Ten Plays of Shakespeare. By Stopford A. Brooke. 311 pp. (Constable.) 7s. 6d. net.—This volume includes ten lectures, and Mr. Stopford Brooke has so high a reputation as a scholar and critic of literature that all that he says in these pages is worth attention, even when his conclusions differ from those one has hitherto adopted. On the subject of Shakespeare's historical plays the author has much to say, and his view that we have in these dramas not only eight separate plays, five of which are complete within themselves, but that these combine to form "one single drama, with a unity of its own, with one subject, with one end to which they look forward, and with one divine justice in them slowly working out its laws to their fulfilment," is carefully worked out. But, of course, this excludes the play of *Henry VIII.*, and to this play Mr. Stopford Brooke devotes no lecture, nor does he even mention it anywhere. While upon this topic of the historical plays, we would, however, draw special attention to the author's analysis of *Richard III.* His conclusions are not wholly convincing, perhaps, but his view is expressed with masterly lucidity, and is to be recommended for further consideration. In dealing with Macbeth, Mr. Stopford Brooke inclines to the view that Shakespeare made of this figure a genuine poet. This estimate is supported in these pages by a careful analysis, and the case for it is perhaps more strongly and judiciously put in these pages than anywhere else in modern criticism; and Lady Macbeth no less is treated in a fresh and original way. The lecture on *Coriolanus* also affords much food for thought, for even when one disagrees most with the author's conclusions they are stated in a way which commands respect and invites further consideration. The book may be warmly commended as a genuine contribution to the highest class of Shakespeare criticism.

Documents Illustrating Elizabethan Poetry. By Laurie Magnus. 221 pp. (Routledge.) 2s. 6d.—This is capital. Here we have three of the most celebrated works in the

history of English criticism—Sir Philip Sidney's "Apology for Poetry," portions of George Puttenham's treatise on the "Art of English Poesy," and the greater part of William Webbe's "Discourse of English Poetry"—bound together, and supplied with an admirable and scholarly introductory chapter and useful footnotes. The spelling has been modernised from beginning to end, so that those who take any genuine interest in English literary criticism may now get in a handy form some of the important contributions that have been made to it. At least they may study it in these pages in its earliest aspects; and the most modern of us can hardly afford to treat lightly these Elizabethan treatises, even if he have sat at the feet of Matthew Arnold and Saint-Beuve, or anybody else. We warmly commend this volume, which is an efficient execution of a well-conceived plan, and is likely to confer a distinct boon alike on the scholar and the general reader.

Sir Thomas Browne. By Edmund Gosse. vi.+215 pp. (Macmillan.) 2*s.* net.—In this book we now possess an account of the celebrated physician of Norwich which ought to become popular. There are a hundred people who have read Sir Thomas Browne's best works for two who know anything about him and the course of his life. A biography adapted to the needs of this large class of people has long been a desideratum, and Mr. Gosse's volume is in every way as worthy of its place in the famous series of English Men of Letters, as its subject is in the esteem of thousands who find his style and his thinking welcome enough in these days of curt scientific precision. Naturally, the larger part of this book is concerned with Sir Thomas Browne's works, rather than with his career, which was unexciting enough; but to follow his biographer through his analysis of the series of remarkable books which he produced is a pleasant exercise; and, moreover, Mr. Gosse displays a deep acquaintance with the equipment of what was for his age a singular and remarkable mind. If, as he says, Browne "was less a man of science, an all-round naturalist, than a dreamer of philosophic dreams, satisfied with brief and partial experiences," he nevertheless knows how to subject Browne's intellect to an examination which begets both a sympathy and esteem for its qualities not always given to minds of a much more practical and modern cast. The chapter which deals with the celebrated physician's literary style and use of language is of especial value to all concerned with that phase of education which includes the writing and criticism of essays. To teachers of literature the whole volume may be warmly commended.

Milton's Comus, L'Allegro, Il Penseroso, and Lycidas. xiii.+71 pp. (Longmans.) 9*d.*—An addition to a well-known series of class-books of English literature, which retains all its usual features and deserves praise.

Exercises in Paraphrasing and Analysis. By F. W. Tickner. 42 pp. (Longmans.) 6*d.*—May be recommended for examination purposes. Nothing but examples from beginning to end, but a varied and useful collection of these.

The White Company. By Sir A. Conan Doyle. 192 pp. (Longmans.) 1*s.* 6*d.*—This celebrated story here appears as a school reading-book, having suffered abridgment and adaptation, and being supplied with some useful brief notes and several capital illustrations. It ought to be popular.

The Simpler Poems of William Wordsworth. By E. Hutton. 48 pp. (Dent.) 3*s.* net.—A slight but creditable piece of work, likely to prove useful in junior forms.

Narratives from Macaulay. By Fanny John 119 pp. *Kingsley's Andromeda.* By G. Yeld pp. *Shakespeare's Midsummer Night's Dream.* Creswell. xx.+92 pp. (Macmillan.) 1*s.* each.- additions to the series of English literature fo schools which Mr. Fowler is editing with s guished success. The story of Perseus is happ to Kingsley's work, and all three books make g

The Works of Geoffrey Chaucer. Vol. III (Frowde.) 1*s.* net.—Mr. Frowde is continuing of the World's Classics begun by Mr. Grant This volume contains the Canterbury Tales c and is a marvellously cheap and well-printed edition.

History.

An Advanced History of Great Britain. By xlii.+755 pp. (Longmans.) 5*s.*—This is the Historical Series for Schools on the "concentr and is intended to meet the practical wants of forms. Prof. Tout is an acknowledged autho mediæval history, and therefore teachers ma trust him against any other text-book until w Reformation times. But he is also good for as well. This book is unusually good on the the seventeenth century, and is quite up to the best text-books for the eighteenth and nineteent It is well supplied with maps and plans. Th "pictures," but there is an unusual abundanc logical tables, not only of kings, English and also of important families, such as the Nevill Pitt-Grenvilles. Each "book" is also supplied bibliographies. If our pupils must, as is general have but one text-book in their hands, we ca commend this as one of the most suitable.

Lectures on Modern History. By Lord Act 362 pp. (Macmillan.) 10*s.* net.—Among the a the late Lord Acton during his too brief ten History Professorship at Cambridge was the courses of lectures. Messrs. Figgis and Laure in this volume, with an introduction from their the course on general modern history, as w inaugural lecture on the study of history, d June, 1895, and now free from the numerou which disfigured its first publication. Here, th have some of the work of the master, of him has been said he could, with the necessary written the whole of the Cambridge Modern H in course of publication under his auspices. It the whole, easy reading; and a fair knowledge history is required to understand it. But for wish to know what history is, and can be, an not afraid of tackling a tough book, we gladl opportunity of pointing to one who knows. altogether nineteen lectures on European history, with the discoveries of the new worlds in geog learning of the fifteenth century, and ending "American Revolution," *i.e.*, the War of Independence. There are also two appendices, o ing of extracts from the letter which Lord Ac to the contributors to the Cambridge Modern and the other of those formidable notes to the lecture, which were added, surely not to explai expand the compressed thoughts of the public de Here we would gladly end our notice, but encouraged by the professor's own words (p. 2. a word of criticism on a small point. In the l

n Revolution (pp. 200, 201) Lord Acton describes endents as opposed to any established Church. on is modified at the beginning of the next lecture but not quite far enough in our judgment. nts were not logical, and did not carry their to its full extent. They believed in a State nd opposed such institutions only when they were o them in theology or methods of government. 212), we wonder to find a statement that the s in 1672 refused to accept the offers of the King e them from statutory disabilities. On the con- re were many places and persons licensed under ration of Indulgence of that year, lists of them v easily accessible.

History. By P. V. N. Myers. xv.+779 pp. 7*s.* 6*d.*—This is a revised edition of a work seventeen years ago. It contains in outline the f the world from prehistoric times almost to the day. It is of the now well-known nature of books, clearly printed, well illustrated, and ly written, making a good introduction to world-

Mathematics.

ristic Arithmetic. By Clifford Granville and C. E. rt I. (Method). xxii.+129 pp. Part I. (Examples). pp. Answers to Problems in the Examples Book. (Horace Marshall and Son.) 2*s.* 6*d.*—This work ressed us as a very noteworthy addition to the s of arithmetic. It is, on the one hand, evidently actual practice with young pupils; on the other is the outcome of a very careful study, not only ature of the processes of arithmetic, but of the f the child mind. Though we do not quite see to accept in its entirety what may be called the gical basis on which the authors proceed, we think k is so rich in suggestiveness that we would recommend the study (not merely the reading) Method" to every teacher. It is impossible in a tice to outline the position taken up, but we are hat every teacher would benefit by studying the en if he dissented from the particular methods d in it.

's "Method" Arithmetics. Part VI. 56 pp. and Sons.) Paper, 4*d.*; cloth, 5*d.* Answers to . Cloth, 4*d.* net.—The subjects taken up in include practice, proportion, and fractions, in ion of earlier work, and also simple interest and ion. Great pains seem to have been taken to e questions quite definite; at times the accuracy s in excess of what could be obtained in practice, may hope that the teacher will occasionally direct to the limitations of accuracy necessitated by work.

etical Exercises for Junior Forms. Book I. By rgan. viii.+78 pp. Answers, xxvi. pp. (Black.) collection is divided into two sections; the first examples on the simple rules, while the second measures of money, weights, &c. Attention is short methods and to tests of accuracy.

etic for the Preliminary Certificate Examination. I. Chope. viii.+360 pp. (Clive.) 2*s.* 6*d.*—This tated to be a small edition of *The Tutorial Arith-* dapted to the requirements of the preliminary examination. The more difficult portions of the ork have been omitted, and the collections of examples modified, but the method of treatment has been usually retained. For the special purpose for which it is written the book seems to be well suited.

The Rational Arithmetic. By George Ricks. (Macmillan.)—This work is said to be constructed in accordance with the "Suggestions" issued by the Board of Education in 1905, and with the Code of 1906. It is divided into six parts or courses, each course providing material for one year's study; of each course there are two forms, one called "Scholar's Book," the other "Teacher's Book." The latter contains the Scholar's Book, with the answers attached to each question, and also a number of suggestions to teachers as to method, more especially for practical work, together with typical examples worked out. The preface to the Teacher's Book strongly recommends the practice of working from the books; with this practice and with the reasons urged in its support we are in hearty sympathy. So far as we have been able to test them, we think the several books to be very well adapted for the purposes for which they have been written, and we consider them to be worthy of the consideration of teachers. The books are clearly printed on good paper, and are bound in paper covers. The price of each of the six Scholar's Books is threepence, and that of each of the six Teacher's Books eightpence.

Arnold's Shilling Arithmetic. (Without Answers.) By J. P. Kirkman and J. T. Little. viii.+184 pp. (Arnold.) 1*s.*—The book does not seem to be meant for the use of absolute beginners; an introductory chapter reviews the fundamental operations in a somewhat hasty manner, and gives various results on the divisibility of numbers, square and cube roots, and index notation. Decimal fractions are taken up before vulgar fractions, and abbreviated methods of operation come at a comparatively early stage in the course. In addition to the usual material of school arithmetic, the book includes a chapter on the simple equation in one and two unknowns and another on graphical methods; an excellent chapter on areas and volumes contains applications to the circle and cylinder, but, curiously enough, does not mention the sphere. The volume contains numerous exercises.

Longmans' Complete Arithmetics, Mental and Practical. Scheme B. Book VIII. 103+16 pp. (Longmans.) With answers, 1*s.*; without answers, 9*d.*—This addition to the series of "Complete Arithmetics" is issued to meet the needs of pupils in day and evening continuation schools who require work of a more advanced and practical character. Contracted and graphic methods are freely used, and elementary algebra is also employed. A large portion of the book is devoted to mensuration, and contains numerous examples illustrating the principal formulæ for the common plane and solid figures. A large number of examples selected from various recent examination papers is given at the end of the book.

Science and Technology.

Catalogue of Mechanical Apparatus.—Mr. G. Cussons, of the Technical Works, Broughton, Manchester, has published a new catalogue of apparatus for the teaching of experimental mechanics and practical mathematics. The list of experiments in mechanics appears to be very complete. In particular we notice the Tripod and Capstan Block System, which seems suitable for laboratories and class-rooms where space is a consideration; also the numerous dynamical contrivances, in which the vibrating spring and paint-brush are freely employed for measuring time. Those who, like the present writer, have used

Mr. Cussons' apparatus with classes of boys, must have been pleased with its strength and neatness; its appearance commands respect, and its strength is proof against accidents. All of it seems to bear the stamp of experience, and much of it has been evolved out of the work which has been done at the Naval Colleges. Teachers of mechanics are not all in agreement on the question of apparatus; some advocate extreme simplicity, others complexity; but all unite in condemning flimsiness. The work described in this catalogue is free from any possible charge of this nature, and school laboratories which cannot afford to be extensive purchasers of apparatus, and prefer to make their own, will find a few examples of Mr. Cussons' workmanship quite worth having. We commend the catalogue to the consideration of teachers.

Illustrated Catalogue of Mathematical Drawing Instruments, &c. Manufactured and Supplied by W. H. Harling, Finsbury Pavement, London, E.C. 64 pp.—Mathematical instruments to suit every requirement of school or college are included in this catalogue, from presentation cases at £25 down to sets which cost only a few shillings. Boxes of drawing instruments used in various public schools are also illustrated, as well as a variety of scales, rules, and other accessories required for practical work in geometry. A copy of the catalogue should be obtained by teachers seeking mathematical instruments suitable for accurate constructions and measurements, at a reasonable price.

Messrs. J. J. Griffin and Sons, Ltd. (Kingsway, W.C.), have issued new editions of the *"M" List* and of *Part III.* of their catalogues of physical apparatus. The former is restricted to measuring apparatus and materials, mechanics, and meteorology, and the latter to apparatus required in the subjects of magnetism and electricity. Both lists interpret very faithfully the wide range of apparatus which is now available for the teaching of physics; they are well illustrated, and useful tables of physical constants are inserted at the end of each list.

The Life of Pasteur. By René Vallery-Radot. Translated from the French by Mrs. R. L. Devonshire. ix.+484 pp. (Constable.) 7*s.* 6*d.* net.—By his lovable life, by his scientific researches, and by his conquests of disease, Pasteur has earned the blessing of the human race for all time. Let this brilliant story of his career be placed in every library, so that all may have the opportunity of learning how he reached immortality. Deeds of derring-do appeal to the savage instinct in us, but the work of Pasteur commands our higher admiration, because it has saved tens of thousands from disease and death while war has slain its thousands. We cannot conceive of a better biography to stimulate the reader to noble aspirations.

Elementary Chemistry. Progressive Lessons in Experiment and Theory. Part II. By F. R. L. Wilson and G. W. Hedley. xix.+382 pp. (Clarendon Press.) 5*s.*—The authors must be congratulated on having produced a course of practical work which justifies the expectations raised by their introductory volume (noticed October, 1905). Their scheme of work is eminently sane, and will appeal to all teachers of the subject. They endeavour to force the pupil to think logically, and thereby to cultivate a scientific habit of mind. Especially do they try to prevent premature generalisation—the snare of elementary science teaching. While adopting the modern method of individual research, they attempt to relieve the teacher of the increased burden of work occasioned by it. The instructions fc work are preceded by a series of questions, s student may collect his knowledge of the subje cover its limitations. Hints as to form to be ta pupil's notes are followed by a discussion of which have been observed, with a historical their original discovery. The authors claim neither for the subjects dealt with nor for pract but rather for this attempt to save the teacher' that he may be able to insist that each men class shall think about and interpret the e results." One drawback must be mentione theoretical discussion which follows each ex facts are so far given that the idle or dishor may easily read ahead and thus save himself of independent thought and observation. includes combustion, the atmosphere, ne hydrogen, and water. Theory is introduced—t the opinion of many—by experiments on di electrolysis. Chapters follow on atomic weigh carbon, chlorine, nitrogen, sulphur, and their The book is splendidly printed and bound; a price of the complete course may prohibit its into most secondary schools, it is worth the c of every teacher of chemistry.

Introductory Practical Physics. By Prof. W. and W. Brown. New edition. 284 pp. (Sea and Walker, Dublin.) 2*s.* 6*d.*—The first edit volume was published in 1892, and the new practically a reprint of this, except for the c a few typographical and other errors. The cou over a wide range of experimental work on th ment of space, time, mass, fluid pressure, mechanical properties of solids and fluids, and th properties of fluids. The necessary mathemati strations required in the more important expe included in an appendix. For the most part, ments are of an advanced character, and requir elaborate apparatus. A student working in a w laboratory will find the volume of much use second year of a degree course.

Miscellaneous.

Studies in the Sermon on the Mount. By Hon. E. Lyttelton. x.+392 pp. (Longmans.) —The sincerity of this book is obvious, and it pleasing contrast to the too numerous works of which feed the mawkish sentimentality of th It is an attempt to examine the Sermon on in the light of simple common sense, and to really means for our daily life. Mr. Lyttelt been able wholly to shake himself free from positions of his cloth; thus he says: "From o view the Sacraments are essential to salva another not" (p. 52). We do not think tha uttered the Sermon on the Mount would hav any Sacraments are essential to salvation. (p. 64): "In a subject so wrapped in myster that the logical clearness of any theory would b sign of its inadequacy and falseness." But the not that he should have failed to keep hims clear of bias, but that he should have been abl at all. At a time when "logical clearness" i thing we expect from a dignitary of the Chu everyone seems afraid to speak out his opinions any, we welcome most heartily this sincere b Lyttelton is not afraid to say that the relations

ples cannot be governed, as things now are, by the ıws as those of private persons (p. 73), and he ; the causes with insight. His interpretation of who are persecuted " to include those who are d, or disliked, because of real blemishes, this ution " working out by degrees an improvement of r, is fresh, and shows a real sympathy with human His general line of interpretation is, that Christ th in paradoxical or exaggerated form great prin- f conduct, but that the Christian has to apply he must himself decide his problems of conduct, continued decision of these problems on these s gradually educates him into something nearer to ought to be. The book is thoughtful, and suggests and it may be recommended to our readers.

ıs. Novello and Co. have sent us a parcel of publications intended, in various ways, for schol- e. Three operettas are: *The Bee Queen* (1s.), by Moffat; *The Court Card* (1s. 6d.), by C. Hart- and *The Babes in the Wood* (2s.), by G. Jacobi. hese are attractive, both from the musical and the points of view. All provide interesting solo ıd effective work for a chorus, and all supply ıities for the display of pretty dresses and scenic The first two are very simple; Mr. Jacobi's work ambitious, but should not be out of the range of formers who have been adequately trained to sing . *A Garland of Songs for Children* (Set I., 6d.), Novello's School Songs," contains a good collection ıal airs adapted by Dr. McNaught for unison sing- ementary-school teachers sometimes appear to find lt to provide suitable songs for their classes, and ally (with the aid and suggestion of inspectors) ıge in the banalities of musical comedy; collections kind should help them to a right choice in the Sir John Stainer's *Choral Society Vocalisation* ictions and exercises in voice-training to be used ary rehearsals "), in four volumes, price 6d. each, ises of a sufficiently interesting character to enable rs to inflict them upon their choral societies with- h fear of a rebellion. They can mostly be sung ıl pleasure, and should be very valuable as aids voice-production and accurate intonation. These are issued among " Novello's Music Primers," as Miss Emily Daymond's *Score-reading Exercises* . This book comprises forty-eight specimens of ır-part contrapuntal writing, with C-clefs for alto ır. The exercises are about eight bars in length varied in style. Any student who has read them through at the piano or organ ought to find fficient in the art of reading from four-part score.

CORRESPONDENCE.

tors do not hold themselves responsible for the ns expressed in letters which appear in these ns. As a rule, a letter criticising any article or v printed in The School World *will be submitted contributor before publication, so that the criticism eply may appear together.*

Matriculation at the English Universities.

Charles's article in the October issue of The World brings into prominence the way in which ies are accepting each other's matriculation certi- So much the more prominent becomes the mill- l hanging round the necks of teachers and scholars the bidding of the University of London and the group formed by the Universities of Manchester, Liverpool, Leeds, and Sheffield. The London Matriculation and the Joint Matriculation of these northern universities are not interchangeable. The resulting inconvenience to schools is enormous and obvious.

Oxford and Cambridge accept the London Matriculation (under certain conditions); Oxford and Cambridge accept the Joint Matriculation (under certain conditions); but London does not accept the Joint any more than the Joint accepts London.

Surely the teaching profession can put pressure on these universities and prevent them perpetuating the fallacy that things which are equal to the same thing are *not* equal to one another.

Arthur Rowntree.

Bootham School, York.

Science in the Common Examination for Entrance to Public Schools.

May I request a little space in order to plead for a reform in the elementary science papers alternative with Latin verse, set at the common examination for entrance to public schools?

I have before me some of the series taken at random. One paper consists of part i., mechanics and hydrostatics, and part ii., botany—the latter plain and straightforward, it may be admitted; in another one notices reference to the claws of a cat or dog, full moon, metals of railway lines, barometer, and stratification of rocks; again, a third takes the physiological side of botany, the range further including caterpillars and their jaws, birds and their eggs, and questions on physiography. Such variety might meet the requirements of a paper on general knowledge in elementary science, but I would submit that teachers are thereby discouraged in their endeavours to give their pupils a systematic and efficient training in elementary science, such as would lead up to the work of the modern side in a public school.

I would therefore urge that, following the example of other examining bodies, a good syllabus should be drawn up, so that candidates need not depend on the various odds and ends picked up promiscuously in or out of school. And, after all, this would be only fair, for Latin verse is a clearly defined subject; there is no mistaking the road to Parnassus; the track is well beaten, and there are plenty of sign-posts. But while I am convinced that there can be no desire to discountenance science by a flank attack, yet, as the matter stands, this concession to modern tendencies is, to all practical purposes, a dead letter, for one can well conceive boys being carefully prepared in this subject and nevertheless finding themselves confronted by a paper containing a minimum of questions bearing upon their tentative curriculum.

E. J. Petitfourt.

Brighton.

Apparatus for Experimental Mechanics.

I have read with great interest the paper on " The Teaching of Mechanics by Experiment " read at the recent meeting of the British Association, and published in The School World for September. During the last three years I have been engaged in working out in the laboratory a course of mechanics suitable for secondary-school pupils of from fifteen to seventeen years of age; and I am at present putting the finishing touches to a text-book upon the newer lines embodying the results of my work and experience in the matter.

Every teacher of mechanics knows that the great want in the subject is a course of experimental kinetics and

kinematics; we require actual laboratory studies of the motion of typical systems, such as the falling body, simple pendulum, fly-wheel, projectile, &c. Every teacher also knows that the stumbling-block in all such experiments is the difficulty of the accurate measurement of small time intervals.

All sorts of attempts, save that of direct attack upon the problem, are made to surmount this fundamental obstacle. In Atwood's machine coincidences with the vibrations of a seconds pendulum are employed, and in Fletcher's trolley the device of a vibrating spring, marking waves upon the moving body itself. Now, why should not the problem be solved by direct attack, viz., the employment of some accurate time-measuring apparatus, such as the electric chronograph? In most secondary schools some elementary teaching in electricity is now given, and the principle of the chronograph involves nothing more than the properties of electromagnets, such as are exemplified in the common electric bell. If the chronograph employed be of the tuning-fork type, a preliminary lesson upon the tuning-fork will supply all the necessary explanation, and, incidentally, sound waves furnish a typical example of uniform linear motion. Taking for granted that the employment of a chronograph is desirable, it may be applied to the direct determination of time in the motion of the falling body, the pendulum, and the fly-wheel, and also in apparatus to prove Newton's Laws of Motion, &c. The device adopted to secure signals throughout the motion investigated is a matter for the particular motion, and is not difficult to arrange in special cases.

Mr. W. D. Eggar, in his text-book on "Experimental Mechanics," asserts that "the electrical appliances for releasing the falling body and taking the time are sometimes found troublesome." It will be found in practice that they are less troublesome than is currently believed; nine-tenths of electrical troubles arise from bad contacts or similar small errors of manipulation. In any case, the advantages obtained from direct measurement and from the employment of one standard instrument, the chronograph, throughout a series of experimental studies, are worth some small exertion to obtain.

Mr. Fletcher's trolley apparatus described by Mr. Ashford, and also by Mr. Eggar in the work alluded to above, is not perfectly satisfactory in practice. When used for the experimental illustration of the Newtonian law $F=ma$, it suffers from the cardinal defect that part of the impressed force is rotating the wheels instead of producing a pure linear acceleration of the moving system. Further, when the load on the trolley is varied the centre of gravity of the moving system is altered, and if the line of the string passed through the C.G. formerly, it no longer does so; here again error is introduced. It appears to me that an apparatus embodying the chronograph is desirable, which will measure the times, and hence the velocities and accelerations, of a moving system in a more direct and accurate manner. When it is attempted to obtain absolute results from the trolley apparatus its defects become apparent. In a footnote to a section on the determination of g—the result being 975—Mr. Eggar says that "the error is usually more than in the instance given." I venture to assert that errors of 20 per cent. are not unusual in actual work, and that, in fact, the apparatus is quantitatively not in advance of the familiar Atwood's machine of our early mechanical studies. At the same time, the alteration in wave-length as the trolley speeds up is a valuable visual illustration of acceleration, and one of the best features of the trolley apparatus.

I am convinced that the attention of physic needs only to be directed to the problems of mechanics to furnish us with a store of experim tration on the subject. I am equally convinced form of time-measuring apparatus will be nec general application in practical kinetics. It is ir that other teachers will contribute their views a ence that I venture to trespass upon your valu with the present communication.

Huddersfield. JNO. Sc

Pictures for Schools.

YOU frequently point out that when the educat tion" has been dealt with we shall still have a to do for education.

Among the objects which have to be aimed a to brighten the school life of our children is th of satisfactory pictures for the walls of the sch In many schoolrooms too little has been done in

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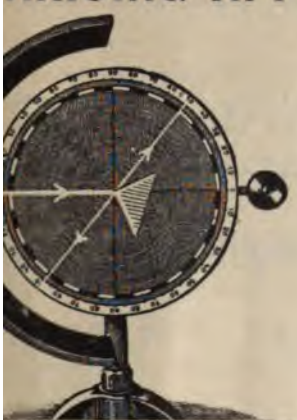

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BEST AUTHORS FOR SCHOOL READING.

By JAMES OLIPHANT, M.A.

admitted that, during the years of ndary education at least, young people ld study their own language, not merely tilitarian purpose of learning to speak it with ease and correctness, or for al training of the intelligence that may d by the analysis of its structure, but he higher end of attaining an appre- its literature. There is no need to the value of such a study, but it will o distinguish some of the effects that xpected from it, since the methods of must be influenced thereby. First, there nulus to thought and imagination that w from direct contact with a master- condly, there is the enlargement of l horizon produced by the incidental expression and allusion. Thirdly, there rating appeal to the æsthetic sense that all genuine works of art. Every piece terature will minister more or less to e ends at once, and perhaps it is not ofitable to seek to separate the different t some discrimination is required when ment has to be made to various stages ement.

be said at the outset that difference of presenting broadly the periods of mental nt, is the only difference that has any e taken into account. No useful pur- e served by varying the school reading to sex; what is good literature for twelve to nineteen years of age is od for girls, and *vice versa*. Still less would it be to try to determine the the social status or the economic pros- he pupils. It is the birthright of all nto the full heritage of their country's without being made subject to any estriction. What, then, is to be the f selection, and what is to be the mode nt adopted, to secure that the three specified above may be most perfectly each stage in school life?

For practical purposes it will be enough to consider the secondary course as divisible into three periods. During the first year or two it is a question of introducing the pupils into the realm of literary art by the easiest and pleasantest paths. In the middle period a somewhat more sustained interest may be counted on, and a more strenuous study can fitly be demanded. At this stage, moreover, some compromise of a complete scheme is sometimes called for, in view of the fact that the school education of many pupils will not extend beyond their fifteenth or sixteenth year. Those who remain to the end of a full secondary course will in its later years be able to enter into something like the measure of appreciation of literature that is possessed by the independent student, and the task of the teacher will be mainly directive.

At about the age of thirteen the boy or girl will probably be promoted from the reading of miscellaneous extracts and selections, or of narratives that have been specially simplified, to the study of literary works of art in their entirety, and at this period it is of the highest importance that the choice of material and the methods of teaching should be such as to secure a maximum of interest. If the youthful student is not attracted at the outset, there is great risk that all his later work in literature will have too much of the character of drudgery to fulfil its purposes, and that the habit of private reading will never be firmly established. But attractiveness is not, of course, the only requisite. Some teachers, in their anxiety to make sure of it, begin with a sensational story like Stevenson's "Treasure Island," which, in spite of its skilful construction and graphic style, has none of that elevation in subject or tone that could alone make it educative in the highest sense. The purely narrative interest should not be so absorbing as to withdraw attention from other kinds of appeal. It is well to take every opportunity of quickening the historic consciousness, so that a story of the past is to be preferred to one that deals with modern conditions of life. But while the setting may with advantage be taken from bygone times, the point of view and the treatment should not, in the case of beginners, be too alien from those that belong to our own day.

The barrier that separates us from the outlook and sentiment of former centuries cannot be surmounted at a bound. Young people must be prepared for such a stretch of imagination and sympathy by a preliminary experience of presentations that are, in part at least, familiar.

For continuous class reading in the early years of a secondary course there can be no better material than historical romances in prose and verse, and Sir Walter Scott is the writer *par excellence* for this period. Stories like "Ivanhoe," "Quentin Durward," or "Kenilworth," and poems like "Marmion" or "The Lady of the Lake," may not be ideal as artistic products. Their accuracy, both as to colouring and as to facts, is not above reproach, and they can hardly be regarded as models of style. But these defects are of little moment in comparison with their recommendations for the purpose in view. They are acknowledged classics; they open up vistas of the past as seen through the eyes of the present; they have the frankly objective, impersonal, unsophisticated outlook upon the world that is natural to youth; they create a thoroughly bracing moral atmosphere; and they have the romantic glamour that sustains imaginative interest.

After a year or two of Scott it is time to try something more solid and serious in prose, and to suggest a higher standard of workmanship in poetical literature. Fiction may give place to biography or records of travel. At this stage nothing could be better than works like Southey's "Life of Nelson," or essays such as Macaulay's on Warren Hastings, or Clive, or Frederick the Great. The cultivation of the historic sense should by this time have given birth to the desire for a closer knowledge of actual fact, and this may most fitly be gratified in relation to the life-work of some striking personality, for it is as yet too early to expect any strong interest in views of life that imply a critical or philosophical attitude. The directness and force and brilliance of Macaulay's style are eminently suitable for this period of introduction to what may be called solid prose reading.

For the readings in poetry, which should always, so far as possible, be taken along with prose, there may be suggested here Tennyson's "Idylls of the King," or some of the tales from Morris's "Earthly Paradise." Such works would serve to maintain the imaginative interest in significant fables and legends of the past, while affording the help to understanding that is involved in a point of view not too remote from contemporary culture. Moreover, the subtler tone of reflection, and the more modern cast of sentiment, that are characteristic of these writers, are in keeping with the temperament of boys and girls who are approaching the years of a conscious personal life. This is the time also to impose a standard of literary technique that would have been premature at an earlier stage. The beauty of Tennyson's versification can now be appreciated in some degree, and will do much towards developing a refined tas a sense of perfection in composition.

The fairly common practice of intr plays of Shakespeare to pupils of four even less cannot be approved. This is time for them. There is, of course, a gr in such a play as "Julius Cæsar," or " V.," or "As You Like It," that may be stood and enjoyed even at this early a not even these can be appreciated wi fullness by such youthful readers, and great pity to forestall the impressions th would make at a later stage. Let them b duced to Shakespeare through the med Lamb's "Tales," and postpone the direc of the greatest treasures of our literatu their intelligence is somewhat riper. A ture beginning will only dull the edge o tite, and may even create a distaste th never be wholly overcome.

Shakespeare may be read with advan any period of the school course from of fifteen or sixteen onwards, if the simp torical plays be taken first, and he may made the *pièce de resistance* for poetical during the middle portion of the secondar culum. By this time there has been study of the language to make it poss the pupils to grapple with the difficulties pression that are peculiar to Elizabethan l and it will be well for them to gain acquaintance with the Shakespearian play passing in the final years of their school the study of authors belonging to still centuries. The prose reading for this period should still be taken from compa modern authors—not going further back t time of Addison and Swift—and it migl advantage be largely occupied with the s essays of a critical and reflective type. many authors who could be laid under co tion, mention may be made of Charles De Quincey, Carlyle, Leigh Hunt, Emers Lowell. These are all stylists who have s a distinctive note in literature, expres certain philosophy of life, and their writing the further advantage that they abound i trative allusions, the study of which may b an education in itself.

The last two years of a full secondary in English literature are naturally devote more systematic and historical study of our authors than it was advisable to attempt earlier period. It is now possible to rel fidently on an interest that is independ adventitious aids, and to assume the nec linguistic preparation for attacking any w from the fourteenth century onwards. B the period of Chaucer and Langland it is n sirable that general students in a school of literature should seek to penetrate. If t tunity permits, there will be a distinct va framing a chronological scheme for this stage, including works representative of th standing periods of our literature. As the

l limitations that need any longer be in the choice of material, the range will wide; but even if regard be paid only y excellence, historical significance, and it interest, it will be found that the rom whom a complete work suitable for is reading can profitably be taken are numerous. In an extended course most ollowing might find a place—Chaucer, Shakespeare, Milton, Dryden, Bacon, Swift, Pope, Gray, Goldsmith, Burke, rth, Coleridge, Lamb, Byron, Shelley, ot to mention authors of a later date. course, understood that short illustrative om other writers, especially the poets, rought under the pupils' notice.

this limited list may be considered a of perfection, and where time does not f much purely literary study, the advice given to concentrate attention largely on so far as poetry is concerned, provided e is already some familiarity with several speare's plays. There is no work more , from every point of view, for advanced eading than "The Canterbury Tales." e taken to represent the earlier phases erature, the accompanying prose reading be chosen from writers of the eighteenth when English prose began to take de- m.

REFORM OF LATIN TEACHING.

By W. H. S. Jones, M.A.
Perse School, Cambridge.

I.

examiners in the Oxford Local Exam- ations of July last, in commenting on e Latin of the Senior candidates, make wing remarks:—"The easier Latin prose a rule, poorly done, and it is quite clear lidates should have more practice in doing ses without dictionaries and grammars. system of learning grammar rules and s has apparently been abandoned, owing heories of learning languages. But the somewhat disastrous, and the great of these exercises were disfigured by stakes as *senatus* feminine, *pars* mascu- s neuter, *corpus* masculine, and so on." eyond dispute that mistakes in gender, ention more serious errors, of such a kind gue lack of clear thinking and not mere e or failure of memory, are much more now than they used to be. But it is, to least, extremely doubtful whether "new of learning languages" are the cause ouble. In the first place, it would be g to know how many of the students l by the Oxford examiners had been n the new method from the beginning. there were few, probably none. In the lace, "the new method," to call it by which is rather objectionable, insists, and insists strongly, on the necessity of learning grammar thoroughly, both accidence and syntax. It differs from the old method in two respects only:—

(1) Grammar should, in the first instance, be taught *pari passu* with the use of the language in oral and written speech. Summaries of grammar, arranged in a logical order, should be postponed to the second or third year.

(2) The only parts of grammar which can safely be neglected are those which deal with unimportant exceptions. The genitive of *supellex* may well be postponed until the word occurs in the form reader.

The fact is that the reformers of method are striving to secure thoroughness and accuracy (*a*) by saving time, and (*b*) by a procedure which is both logical and psychological. They are seeking to avoid the mistakes which are noticed by the Oxford examiners. The real cause of the trouble is lack of time. With the old, slow methods, very little Latin can be taught under modern conditions; the reformers are trying to make the diminished time devoted to Latin yield the maximum of results. But the question naturally arises whether really satisfactory results are possible in the time which can be spared. Two difficulties are in the way, about which I should like to say a few words, since, in my opinion, they go to the root of the matter. For the sake of clearness I will state them at once.

(1) Reformers are not united, and have few means of making known their difficulties and the results of their experiments.

(2) The curriculum of the lower forms is so overcrowded that boys rarely gain a really adequate knowledge of any subject. They do not learn what accurate, precise thinking is, and they do not know how to work for themselves.

Before the new method can be a real success, before it is possible to judge what it can achieve and what it cannot, many experiments must be made. These experiments, and their results, must be discussed and criticised. Up to the present very little has been done, and, so far as I know, no results have been published in English except my own little work on "The Teaching of Latin" (Blackie, 1*s*.). The Classical Association occupies itself with the general principles of reform. But these are well known and scarcely disputed. But the details of method, and these details are all-important, are an unworked field. The few who are working on new lines are groping in the dark. They do not know where to look for aid; text-books are few, and usually compiled by men who do not see the difficulties and pitfalls of their subject. I believe that real progress is impossible unless thoughtful and systematic experiments be made, published, and criticised. I hope to return to this point in a subsequent article.

I must spend a little more time upon what I call the second difficulty. The desire to avoid early specialisation, a desire with which I am in hearty sympathy, has resulted in a most fatal error. Many subjects, perhaps too many, are

included in modern curricula for boys between the ages of eleven and thirteen. But, so far as I can learn, very rarely is an attempt made to make sure that, in one subject at least, really serious work is undertaken and accomplished. Perhaps the greatest advantage of the old classical training was that the boys learnt one thing thoroughly. They knew what hard work meant; they knew what accuracy and precision meant; they had learnt to work for themselves; by mastering one subject thoroughly they were made acquainted with principles of logic which enabled them to attack other subjects in a business-like way. Above all, they were impressed with an ideal of excellence, which they carried to their other work; and they were, in consequence, dissatisfied with hazy knowledge, inaccurate thinking, and careless expression of their thoughts.

Now all this is changed. I think that I shall not be contradicted when I say that most young boys wander from one subject to another until their brains are in chaotic confusion. They learn no subject really well, or, if they do, it is one in which memory, or unconscious knack, is the only requisite for success. They do not learn to think with accuracy and precision. Of course, my remarks do not apply to every school. There are many where the boys are made to think. But in most cases I find that my own view is corroborated by the judgment of examiners and inspectors, with whom I have often discussed the subject. Now it is this modern plague of inaccuracy, this need of precise thought, which ruins a great deal of the work in most subjects, making the teaching of Latin a Herculean task and, in many cases, a virtual impossibility. Habits of inaccurate thinking are brought into work where absolute precision is indispensable. If a large portion of the time-table were devoted to Latin, these faults might be eradicated by the strict discipline enforced by the learning of Latin, but three or four hours a week are not sufficient. If that is all the time which can be allowed, the pupil must come to his work better prepared.

What can be done? To return to the old, one-sided, classical training is impossible, even if it were desirable. The remedy that I suggest is that the curriculum be reduced during the years eleven to thirteen, at which latter age I would begin the teaching of Latin. The curriculum should, at first, be narrow. It should then widen for two or three years. Specialisation can be begun with advantage during the seventeenth year. I recommend this plan not only to improve the teaching of the subject in which I am chiefly interested—no subject can be allowed to domineer over the time-table—but also to benefit the intellectual life of the boys. Slipshod work, so common nowadays, is fatal.

During the earlier years of school-life, say from eleven to thirteen, the mother-tongue ought to be thoroughly learnt. In Germany, and especially in France, this is done in a way which excites the admiration of every visitor. We in England cannot be said to have mastered the problem. I much doubt whether many masters have ever paid real attention to yet all the many sides of mental life developed by a systematic study of the tongue. Boys should be made to expre observations and their thoughts in conci cise, and grammatical English. They sh made to write neatly, and to pay attentio more elementary points of style. They know enough grammar to be able to us matical rules to test whether what th written be correct English or not. And, they should be trained to observe when a a statement does not express exactly wh meant to express. In other words, th be taught to be logical. I should like t to the great help it has been in my ow to be able to appeal to the boys' knowl their mother-tongue.

I believe my proposals would meet approval of the reformers of modern l teaching. One foreign language would b before a second was attempted, or, i words, French would have a start of tw over Latin. The periods thus saved by t ponement of Latin would be given up teaching of English. If English were more thoroughly, modern languages c learnt in much less time, and all scho literary, mathematical, and scientific, wo great benefit.

There is yet another point to be co It is remarkable how rapidly boys pro Latin if they wait before beginning u minds are more mature. A large propo the time spent in the lower forms is wa a boy can learn afterwards in five minut things which require hours in the cas mature minds—if ever they are understoo If a little of the time spent on Latin in t forms could be kept in reserve for a yea the saving of time and labour would be er

I would urge, then, that the reform teaching is delayed by two obstructions

(*a*) Lack of union among classical teac

(*b*) An inadequate knowledge of Englis the boys.

To the former point I hope to return i sequent article. In it I shall also sugge principles which I think might with ad be introduced into the reformed method o ing Latin. In the present article I have upon the barriers in the way of further p barriers which, I am convinced, must be r before success can be achieved.

It may be thought that I have been t matic in the above criticisms. But I a expressing what has been driven into m by bitter experience. My judgment m wrong. I sincerely hope that it is. If false opinion can do no harm. But, on th hand, should there be aught of truth i I say, I shall be thankful if abler teache myself take the matter in hand and set t to find a remedy.

ARRANGEMENT AND EQUIPMENT A GEOGRAPHICAL LABORATORY.

By T. Alford Smith, B.A.
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URING the last ten years, so great an advance has been made in the methods of geographical teaching that the subject ow taught in up-to-date schools may be st termed a new one. In old-fashioned ls the antiquated method of learning lists mes, often without any reference to maps, obably still in vogue, but the method is, nately, dying out, while its place is being by the "new geography," taught in ac- nce with scientific principles, having as its the correlation of the various distributions, illustrated so far as possible with practical ises. The old method required no geo- ical environment; any class-room was good gh; any master was looked upon as com- t to teach so dull a subject; while a text- and sometimes an atlas formed the entire -in-trade. Now, however, the new methods re new conditions; teachers with special ledge are being employed, suitable appara- s being used, scientific methods are being ved. Just as a specialist in chemistry or cs requires a laboratory, so the specialist in raphy works better in a room in which geo- ical work can be carried on in the most ive way.

itinerant teacher of geography cannot carry one class-room to another the apparatus with to illustrate the main subject of the lesson at the same time have at hand maps, dia- s, &c., to illustrate the points which occur entally during the lesson. In every school possible to have a room set apart for this al purpose, in which all the apparatus be- ng to the school, whether much or little, be available for use at all times. In select- a room, a large one has many advantages. iding as it does plenty of wall-space for and diagrams, and floor-space for the ex- ion of apparatus. The equipment of such om presents no serious difficulty as regards for expensive apparatus is not needed; ap- tus made by the pupils themselves is often useful for illustrative purposes than elaborate costly specimens.

propose, therefore, to describe how a room be equipped for geographical work, and at ame time to point out the special work that e most effectively carried on in it. By way xample I shall refer to a room in my own ol that is used entirely as a geographical atory. In any room a globe of large size sential and should always be in evidence; obe of not less than 20 in. diameter, with te surface, having the outlines of the con- ts drawn in white, and a few lines of latitude longitude incised, will be found to be most ble for ordinary work. This will probably he most expensive piece of apparatus in the room, costing about £3; cheaper globes[1] can be obtained and are better than none. A few good wall-maps, such as the World, England, &c., should be hung up in conspicuous places for constant reference, while maps for which there is no wall-space should be kept in a rack close at hand. Arrangements must also be made, by means of blackboards or easels, to exhibit several maps of a country at the same time; *e.g.*, a lesson to a high form on the vegetation of Africa might with advantage be illustrated by—

(*a*) a contour map of Africa;
(*b*) two or more seasonal rainfall maps;
(*c*) a mean annual rainfall map;
(*d*) a map showing the forest regions, alluvial valleys, deserts, &c., and on which the vegetable productions can be marked in the course of the lesson.

Large outline maps for teaching purposes can easily be made on sheets of drawing-paper by using these sheets as a screen and then throwing a map of the country on them by means of the lantern.

It is also necessary to have cupboards and

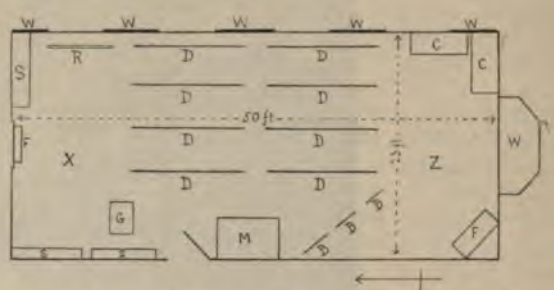

Fig. 1.—D, D, represent the position of desks; R, map-rack; C, cupboards; S, cases for specimens; B, blackboards; M, master's table and platform; G, table on which the globe stands; F, fireplaces; W, windows.

shelves fitted up to accommodate maps, books, apparatus, &c. Here it may be remarked that a geographical library, composed especially of reference books, may in time be formed; in the choice of books, an article by Dr. H. R. Mill, entitled "A Teacher's Library of Geography," in The School World, January, 1900, may be consulted; the library should include books written by as many modern geographers as possible.

Cases for specimens of commercial products should also be provided; a collection of such products is most useful, and pupils are often able to contribute specimens to make the collection more complete. A case containing a few large pieces of the commoner British rocks—especially the aqueous rocks—will also add to the interest of many geography lessons. Specimens of large size (viz., $3\frac{1}{2}$ inches by $2\frac{1}{4}$ inches) can be obtained for 5*s.* or 6*s.* per dozen.

The plan of the room I have in mind (Fig. 1) allows for sitting accommodation for thirty-two boys in the eight desks. A photograph of the north end of the same room is shown in Fig. 2.

[1] See "Globes and Models in Teaching Geography," by J. W. Jarvis, The School World, January, 1906.

The dimensions of the room are 50 feet by 23 feet; the height is 12 feet. The space x (Fig. 1) between the desks and the north wall is usually taken up with small tables, on which reference atlases, maps, &c., can be placed, and round which a limited number of boys can stand for lessons in map-reading. Between the desks and the south wall, z, there is ample space for setting up apparatus such as plane table, &c., while this part of the room can be used for making rough relief maps with plasticine, modelling-clay, or other suitable material. In such a room it is possible to keep a record of temperatures, pressures, and rainfall, and to make a series of simple observations of the sun.

Great care must be exercised, however, not to tabulate long lists of statistics just for the sake of making record tables, for these may prove quite as uninteresting and unprofitable as the lists of capes, bays, &c., of the old geography books. Every list should be compiled with some definite purpose in view, *i.e.*, to be utilised and correlated with the rest of the work. Pupils must, of course, be taught how to make observations and to read meteorological instruments; after a little practice, however, this becomes a purely mechanical operation, and then it ceases to be of any educational value; but if the result of an observation or a series of readings be used in as many ways as possible to illustrate other lessons, then there will be ample justification for the time spent on such work.

FIG. 2.—The Geographical Laboratory, St. Dunstan's College, Catford.

For example, the observation and measurement of the shadow of a needle set up in the sunlight may be made the subject of many experiments, the results of which may be used in many lessons. Among the exercises depending on this observation the following may be mentioned:—

(*a*) To find the altitude of the sun by measuring the length of the needle and the length of the shadow, and then reading the altitude with a protractor.

(*b*) To plot a curve on the horizontal surface by noting the varying length of the shadow at equal intervals of time.

(*c*) To find the direction of the north-south line *by means of* equal altitudes.

(*d*) To find the latitude of the school from the altitude of the sun at noon. At the equi the latitude = 90° − altitude. At other time latitude = 90° − altitude ± declination.

(*e*) To find the sun's path in the heaver a period of several months by keeping a r of the noon altitudes of the sun taken at int during the period.

Fig. 3 shows the results of a series of obs tions, taken during the summer term, from the curve has been drawn. The altitudes of course, only approximately correct, but were sufficiently exact to show that the rose higher and higher in the heavens up t solstice, after which it began to descend. observed altitudes were:—

May 18. 57° 20′	June 13, 61° 30′	July 6, 6
May 27, 59° 45′	June 21. 62° 0′	July 12, 6
June 1, 60° 15′	June 28. 61° 45′	July 19, 5

The altitude of the sun can then be fou other methods; *e.g.*, (*a*) by the sextant; (*b*) shadow needle t across a rant dra a shee plane of is in the of the dian. latter me most el on a wa side the ing and which due west

Again, ful seri exercises be per with the By exa it, pupi discover themselves (*a*) that all the lines drawn globe are circles; (*b*) that the equator circles passing through the poles divide the into hemispheres; (*c*) that all the other divide the globe into unequal parts; (*d*) the land masses are nearly all north equator, and so on.

It can then be shown by experiment (*a*) the equator and prime meridian are the circles necessary to determine position; (*b*) all other circles are drawn for convenien measuring distances; (*c*) that all these depend on the rotation of the globe.

Having learnt these elementary facts, possible to proceed to the more difficult mination of the lengths of day and night. can be done on a large scale by clearing room of desks, and by setting up in the of the room a small lantern or other bright At equal distances round the light four

aced on which the globe can rest, and
d be so arranged that the centres of
and light are in a horizontal plane.
old the axis of the globe vertical and
ht of the lantern fall directly on the
t will be seen that the plane of the
ding the light hemisphere from the
is at right angles to the plane of the
bit, and it passes through the poles.
be be now carried round the light it
n that under these conditions the sun
always vertical on the equator, and
nd nights would be equal in duration
the year. But from experience we
the sun is only vertical on the equator
ear; that it is vertical over places in
ong. on June 21st, and over places
g. on December 22nd; moreover, that
of day and night varies throughout
except on the equator). To account
phenomena, repeated trials demon-
the axis must be inclined $23\frac{1}{2}°$ from
to the plane of the earth's orbit. The
ld now be placed with the North Pole
ay from the light, and the northern-

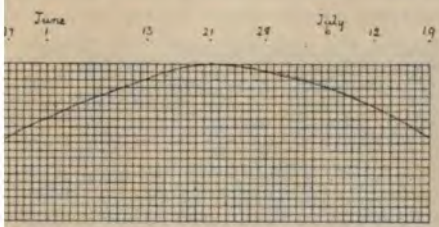

FIG. 3.

reached by the light should be noted.
nt a piece of chalk should be held while
is rotated; in this way a circle will
viz., the Arctic Circle, and it will be
t all places within it are in darkness.
all places within the Antarctic Circle
ated.
the globe be carefully carried to the
(*i.e.*, through an angle of 90°) with
lways pointing to the Pole Star, it
n that the light will gradually creep
rctic Circle until it just reaches the
e, while the direct rays fall on the
In the same way observations can be
he globe is slowly moved into other
ound the light. It will thus be clearly
t the Equator, Tropics, Arctic Circles
the varying positions of the earth in
revolution round the sun.
e phenomena may be illustrated to some
aking a vessel of water, the surface of
esents the plane of the earth's orbit,
ubmerging in it a sphere on which the
ioned above are marked, and whose
lined $23\frac{1}{2}°$ from a vertical to the water
By moving the sphere round a fixed
he water surface to represent the sun,
the apparent movements of the sun north and south of the equator may be demonstrated.

Again, it is a great saving of time to explain in the geographical laboratory apparatus which will afterwards be used out of doors; for instance, the plane table can be set up and levelled; the direction of the magnetic north can be determined with a compass, and the use of the sight-ruler explained. All this can be done conveniently indoors, so that when an opportunity comes for outdoor work, the limited time in the field may be fully occupied in actual surveying and map-drawing.

Similarly, a rain-gauge can be shown and explained so that pupils may see how the amount of rainfall for a given time can be measured. After this the gauge may be placed in a suitable position, and each day the amount can be measured and entered on a chart kept for the purpose. In this case the method is perhaps more important than the actual results obtained, as holidays interfere with the readings for a considerable part of the year. Lastly, charts showing readings for daily temperatures and pressures can be plotted, while the "Daily Weather Reports" issued by the Meteorological Office can be utilised to show the use of comparing statistics compiled in different places.

A course of geographical work and practical exercises such as that indicated above can only be successfully undertaken in a room specially reserved for this purpose—many of the experiments can be carried on without seriously interfering with the ordinary geography lesson. Few books have as yet been published on practical work; but "An Introduction to Practical Geography," by A. T. Simmons and Hugh Richardson (Macmillan, 3*s*. 6*d*.) is suggestive and full of interesting exercises; and "A Progressive Course of Comparative Geography," by P. H. L'Estrange (Philip, 6*s*. net) will repay examination.

TEACHERS' NOTES ON BRITISH HISTORY, 1688–1906.

By C. S. FEARENSIDE, M.A. (Oxon.).

I.—BRITAIN AND EUROPE IN 1688.

BRITISH history during the generation following the flight of James II. has been already dealt with in these columns (May, 1900), but then it was as the conclusion of a period. Very different, of course, must be its treatment when it forms the beginning of our studies. We have to make sure that the terms used convey a meaning that is at once definite and correct; and this can often be attained only by some sort of historical retrospect. In geometry, *square, triangle, circle,* and other terms have definite and stable meanings; but in history we have to deal with things called by such names as *England, Kingship, Parliament, Church,* which have a dangerously familiar look that often hides the fact that they are really as

changeable as a chameleon and as elusive as Proteus. It is not usual nowadays to begin the study of geometry by learning off by heart a hundred abstract definitions; nor need we begin our study of the last two centuries by historical definitions of, say, the thousand political and geographical terms that will crop up during our period. But we can begin with a general *résumé* of the historical geography of both Britain and Europe, and make sure of our political terms as we come to them. A select list of these is given in the "Vocabulary of Political Terms" contained in Mr. J. S. Lindsey's "Salient Points in Modern History" (Heffer, 1*s*.).

(i) BRITISH DOMINIONS IN 1688.—The obvious differences in both the course and the results of the Protestant Revolution in the three kingdoms and in the oversea dominions at once justify and necessitate a retrospect explaining their differences—geographical, racial, linguistic, institutional, and ecclesiastical. The recentness and the looseness of this aggregation of realms (which was almost as fortuitous as the association of the Britains and the Netherlands under William III.) can hardly be over-emphasised. For literary illustrations one could use such familiar "poems" as Defoe's "True-born Englishman" (for England), "Lillibulero" (for Ireland), and Sir Walter Scott's "Bonnie Dundee" (an admirable text for a little discourse on the essentials of Scottish history): for the chief historical data we can hardly do better than consult Mr. H. B. George's "Historical Geography of the British Empire" (Methuen, 3*s*. 6*d*.) and Mr. Robertson's companion Atlas (Methuen, 4*s*. 6*d*. net).

Failing time for such a connected survey, the principal facts could be given or elicited in connection with post-Revolution events: for instance, Killiecrankie and Glencoe, the Dublin Parliament, the Siege of Derry, and the Broken Treaty would be so treated as to reveal the fact that "Scotland" and "Ireland" were still little more than "geographical expressions," while the differences between the *Bill of Rights* and the *Claim of Right*, and again between the ecclesiastical settlements in England and Scotland, show that the dreams of Somerset and Maitland had not yet been fulfilled by the establishment of "Great Britain." And these points all help towards accounting for the differences between the "union" legislation of 1707 and 1719.

As regards "British Dominions" oversea, I have found that a most suggestive starting-point can be obtained by eliciting from the class a list of such in 1688. There are usually a number of bad shots: these may be collected on the blackboard in three columns dealing respectively with past (lost), present (in possession), and future (not yet won). Ultimately the middle column will be found to contain some score names which stand for a sprinkling of "factories" in Asia and Africa (mainly on the coasts), a few "plantations" in the West Indies, and a fringe of "*settlements*" along part of the Atlantic coast of North America. Both the actual insign and the potential importance of these coul be displayed by means of the mutually il tive books, before cited, of Messrs. Geor Robertson.

(ii) BRITISH INSTITUTIONS.—All these thir be regarded as coming under the head of torical Geography," and can be made cor tively visual and objective by the help of Institutions stand on a very different footing their abstractness and the confusing con between formulae and forces, between outwa pearances and actual facts, make their eff handling difficult. In fact, the treatment especially must vary according to the taste previous training of both teacher and pupi the time at their disposal, and to their ult objective. It would not, I fear, "pay fo aminations," but yet I cannot help thinkin it would pay as a "preparation for life," to the "civics" standpoint in dealing with th tory of institutions during the last year o of the school career. That is to say, the should be given some idea, clear and d so far as it goes, of how we are governed t and all the constitutional facts encountered historical course would be treated mainly a towards the existing state of things. I imagine this is easy, but I am sure it is doing, and American experience at least to show that it is possible to do it. The t who would essay this task must be stee Prof. A. V. Dicey's "Law of the Constitu (Macmillan, 10*s*. 6*d*. net), and he can find useful hints on suggestive class-room tre of topics in Mrs. Dale's "Principles of E Constitutional History" (Longmans, 6*s*.), method in Prof. H. E. Bourne's "Teach History and Civics" (Longmans, 6*s*. net). a mode of procedure would not, I belie wholly unprofitable even from the point o of "examination results." Most boys an can "enumerate the principal clauses" *Bill of Rights* or *Acts of Settlement* wit siderable success: they are markedly less su ful if they attempt to explain the practical ing or bearing of those "clauses" or to any long-continued constitutional developm

(iii) BRITISH SOCIAL CONDITIONS can cer best be realised by contrast with the cond of to-day. This is the method adopte Macaulay's famous third chapter; and thoug contrast to the England of his own day i so effective to us as it was to his own gener it still remains, so far as I know, the be troduction for intelligent youth to the social of the history of the last two centuries. teacher or the more inquiring pupil will be to correct and supplement Macaulay by th of the fourth volume of "Social England," by Messrs. J. S. Mann and H. D. Traill (C 14*s*. net).

(iv) BRITISH EXTERNAL RELATIONS.—He have to deal (both separately and in combir with three things—the States, their Rulers

eir Policy. The first is geographical, and can made clear by means of historical maps. The cond is biographical, and, if we had a rational rriculum in History, most of the notable person- es would be something more than names to pils before they reached the penultimate stage their school career. The third is mainly the ultant of geographical and biographical forces.

(1) FOREIGN STATES.—In 1689 the central State Europe was France, which was surrounded a ring of actual or potential enemies named England, &c.," "Holland, &c.," "Austria, ," "Savoy," and "Spain." The map-mean- of each of these terms (and especially of the tceteras" by which three of them are followed) st be made clear by the help of both physical ps and maps showing Europe in 1688 and rope at the present day. The most dangerous ors are the attribution of political meanings "Germany" and "Italy," the creation of an aginary "Empire of Germany" to which stria and Prussia stand in either vague or aginary relations, and the premature use of Holland" and "Belgium" as names for in- pendent entities. Nearly all the essential ex- anations could be made in connection with an position of the northern and eastern boundaries France: a physical map would reveal the ab- nce of natural frontiers; the diagrams in Free- an's "Historical Geography" (Longmans, vol. , 6*s.* 6*d.*) would reveal the recent fluctuations the political frontier and the possibilities of rther French expansion; while the weakness of e neighbours of France in these directions could explained historically by reference to the Holy oman Empire (introducing Austria, Bavaria, the alatinate, Brandenburg, Prussia, Savoy), and the cleavages effected by the Reformation. his last topic would naturally lead up to the personal union" of "Holland, &c.," with England, &c.," under William of Orange[1] (the uation of which principality might as well be covered to or by the class).

As regards the outer ring of European States, it uld suffice to mention *Poland* in connection with ussia; *Russia* and *Turkey* (noting generally ir extent and limits) as the successors of the tern side of the old Roman Empire; *Sweden* still the dominant Power in the Baltic (con- ting the fact with the quarrel between arles I. and his English Parliament); and ecially to direct attention to the possible inter- tion of these distant Powers in Western itics. Here the idea of concentricity would useful: France, in the centre, is disliked by st of her encircling neighbours, who are in n disliked by the next ring of States; hence ance often has hereditary dislikes in common t a very strong tie) with members of the ter Ring (*e.g.*, Ireland, Sweden, Poland, and rkey). Early in the eighteenth century, of arse, the members of the Outer Ring will come up for substantive consideration—*i.e.*, in their own mutual relations, not as satellites, actual or possible, to Western Powers. "Putzgers Historischer Schul-Atlas" is by far the best and cheapest to illustrate such points concerning German and general European history (Nelhagen, 3 mk.): care should be taken to get a recent edition.

(2) FOREIGN RULERS.—Here *Louis XIV.* is the only figure of transcending importance; and the shadowy nature of the figures of his earlier opponents, *Leopold I.* and *Charles II.* (of Spain), will help to throw into relief the dominant personality of *William of Orange*; while in the background must be named the mightier figures (though to contemporary Westerns they were but shadows) of *Charles XII.* and *Peter "the Great."* The pages of Macaulay's "History" and of Voltaire's "Louis Quatorze" contain vigorous portraits of the Western protagonists; for the Northern one it would be difficult to excel the closing lines of Dr. Johnson's "Vanity of Human Wishes"; and to correct these literary portraits according to the most recent historical lights we turn to the fourteenth and seventeenth of Lord Acton's "Lectures on Modern History" (Macmillan, 10*s.* net).

(3) FOREIGN POLICY is the result of geographical and biographical facts and fancies, and is exceedingly complicated. The main motives and general tendencies must be made clear, but not by the neglect or suppression of the exceptions. At the outset we need consider little beyond the following questions:—

Especially as concerns the British Dominions.

(*a*) What were Louis XIV.'s chief aims, especially in the international sphere?

(*b*) How far were these aims peculiar to Louis XIV., and how far normal in French history?

(*c*) How did these aims affect each of his neighbours?

(*d*) Why did each of these neighbours *wish* to oppose him?

(*e*) How far did each of these neighbours *dare* to oppose him?

(*f*) What causes helped and hindered these neighbours working together against Louis XIV.?

(*g*) What were the main incidents and results of these struggles?

Most of the facts worth remembering by the non-specialist are closely connected with some of these crucial questions. I have endeavoured to show that such matters can be treated shortly and simply (without, I hope, much serious falsification) in my article on "Foreign Affairs, 1688–1832" (THE SCHOOL WORLD, May, 1901). But that article is quite elementary: it represents merely an irreducible minimum for the pupil. The teacher will naturally go further afield for materials; and the most suggestive books of moderate size to consult are Lavisse's "Vie générale de l'Histoire politique" (Colin, 3 fr. 50), Sir John Seeley's "Growth of British Policy" (which, it is to be hoped, the Cambridge Press will soon be able to issue in one volume at a

[1] If, without warning, all the schoolboys of sixteen in England were pro- ed an orange if they could say where Orange is, how many cases of ges would the prize-giver require to pay his debts?

lower price, and equipped with the tables, &c., which would make it a good abiturient book for upper forms), and especially the trenchant views expressed in the recently published "Lectures on Modern History" by Seeley's successor at Cambridge.

IS AN ACCURATE FIGURE ESSENTIAL TO THE PROOF OF A GEOMETRICAL THEOREM?

By A. T. WARREN, M.A.
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AT the time of the introduction of the new method of teaching geometry, grave fears were expressed by some mathematicians as to the result of the experiment. For a time their fears appeared to be justified. They could point to examination papers, set for fairly advanced candidates, which required little more than geometrical drawing and the application of simple geometrical principles. The demand for more solid reasoning seemed to be disappearing, and the proposition was at a discount. With this attitude of the examiner towards the subject, were teacher and pupil likely to refuse to take the path of least resistance, which was thus thrown open to them? With some, geometrical drawing became a craze; the ruler and compasses were used on every occasion. So far as the ordinary class-work was concerned, the inaccurate figure almost ceased to exist.

This, however, merely represented the transition stage. We have now reached the stage at which, instead of candidates on whose old Euclid stock the new method has been grafted, we have those who from the beginning have been trained on the new lines. Examining bodies, too, have modified their demands for geometrical drawing so far as the later stages of the subject are concerned. It is, however, open to question whether too much attention is, even now, not being paid in the class-room to geometrical drawing. Is experimental work, which at the beginning is so stimulating and instructive to the pupil, being allowed undue prominence in the later stages? Are we bringing up a set of pupils who from their dependence on instruments will be incapable, without their aid, of drawing a figure that would serve as an intelligible guide to their proof of a proposition? As an answer to these questions, the Report of the Examiner in Geometry for the Senior Oxford Local Examinations is of interest.

The Report begins by stating that "the work showed a great improvement over that of last year. For the most part the propositions were correctly written out and a fair number of candidates were successful in solving riders." So far, so good. Satisfaction is expressed with that part of the work in which there is a call upon their reasoning powers. But, alas! there is a fly in the ointment. The Report proceeds to state that "the most unsatisfactory work was done *in the drawing* of the necessary figures. A question which required the bisection vertical angle and the bisection of the ba triangle scarcely ever produced a figur approaching to correctness." Should nc a result have been expected? Was it not evitable consequence of the conditions of amination, if the candidate's training ha him absolutely dependent upon the aid instruments? He was desirous of doing a questions as possible. Was it likely t would spend time in mechanically repro those exact figures which had been encou if not insisted upon, in his ordinary class He was pressed for time, and very natura carded the use of instruments. Thus his d broke down. For a year he had been a to the ruler and compasses; for one day joyed the pleasures of emancipation. The was natural. Yet should it be made a ple still more slavish adherence to the methods produced it? Should it not rather serv reason for encouraging the pupil to depend ever possible, on his own unaided illu powers.

This unsatisfactory drawing of the fig connection with the writing out of prop and the solution of riders may come as prise to some of us. Still more will be ished by what the Report proceeds to impl are told that "many candidates who fa drawing the figure sent up an otherwise f proof." What are we to make of this 'otherwise' is the crux of the whole Without it we have a mere criticism of th of the candidates. With it we have an i tion that the figure is a part of the pro to this exception must be taken.

What is the function of the figure nection with a geometrical theorem? Is merely a guide helping one to follow the and not a part of that proof? It cann to prove; it may serve to verify. This ently is not the opinion of the author Report, for he proceeds to imply that ac of drawing in a theoretical demonstratio matter of importance. The object of this is to show that such accuracy is not men necessary, but that to attain it by the ot methods is in some cases unjustifiable, and cases undesirable.

A question, such as that with which now dealing, was liable to arise under th as well as the new, conditions of te geometry. Under the old conditions we have had to be content to form our jud from a study of the text of Euclid. At the p time we are more fortunate. We have th commendations on the Teaching of Geo issued by the Committee of the Mathem Association, on which our modern text-book based, and which have been accepted by ex ing bodies as embodying the principles on they are prepared to examine. In that p the Recommendations which deals with the the Committee states that it makes its

vith a view to making the course of independent of methods of construc- the same paragraph hypothetical con- as they have been called, are recog- t is to say, angles and straight lines supposed to be bisected before any r doing so has been justified. How is igure in such cases logically possible? take a case to illustrate the way in demand for an accurate figure could lly be complied with. Suppose that it d to prove that all points equidistant arms of an angle lie on the bisector of . How is the necessary figure to be d if accuracy of drawing is demanded? a point satisfying the hypothesis, one he fact that all points within the angle at the same distance from one of its n a straight line parallel to that arm. t line drawn parallel to the other arm n all the points within the angle which same distance from the other arm. If loci be drawn, their intersection gives t which is equidistant from the two r this construction to be justifiable, the the locus of a point which is at a given rom a given straight line must have iously established by proof. In how -books on geometry is the proposition, se has thus been made, anterior to the hich the proof is being established? is another way open; one may start ng the given angle, and then take a the bisector. In such a drawing the of the proposition will have been n order to satisfy the conditions con- he hypothesis. An accurate figure will tained which is not even useful for the verification.

one great difficulty in basing the argu- he logical sequence that must be ob- geometry, for there is no longer an common order of propositions. Let refer to Euclid, and endeavour to see ision he made for the drawing of an gure. In I. 4 it would be necessary to two triangles with two sides, and the ngle of the one equal to the correspond- of the other. How is an accurate re- n of them to be given? The same diffi- s in I. 6, where we should have to a triangle with its two base angles each case a construction is required g an angle equal to another. Such a n could not be justified till I. 8 had d. For an accurate figure to I. 8 we uire to be able to draw a triangle with qual to those of another triangle; such tion first appears in I. 22. After this at I. 23, which gives us the method for g the accurate figure to I. 4, the pro- ith which we started. It thus becomes at even Euclid's order of propositions allow us logically to furnish an accurate n every case. Our present text-books are no better in this respect. To meet this new demand for the exact figure, the whole subject would require reconstruction after being once more cast into the melting-pot.

It would be interesting to know what would have been Euclid's views on the accurate figure. We all know his strict views as to the character of the line and figure. Would he have considered any diagram, however accurate, as a figure at all? When he begins a particular enunciation with the words "Let A B C be a triangle having the two sides A B, A C equal," what is to be taken as his meaning? Is he introducing a diagram? Is he making a demand for a hypothetical construction? Is he not merely naming the parts of the hypothetical figure, not an actual diagram, to which he will refer? A diagram of any kind is unnecessary so far as the proof is concerned. It generally becomes necessary owing to inability on the part of the prover of the proposition to carry out the reasoning without some such check.

The diagram in reasoning is on a par with the use of the fingers in addition. The necessity for their use in each case arises from one's mental limitations. Neither accuracy in the former nor *absolute* cleanliness of the latter affects in the least the result for which it is being employed. A reasonable approach to such perfect conditions is to be exacted only for the purpose of general education.

Neatness, merely for the sake of neatness, can be gained at too high a price. Time that should be devoted to reasoning ought not to be sacrificed to mechanical drawing. The last should have been practised in the earlier stages, and it is then that it is necessary. Without it the pupil can neither discover nor verify a geometrical truth; without it any quantitative result obtained in practical geometry is worthless. Even with it one cannot depend on the exactness of the result as one can on a result obtained from calculation based on reasoning. The latter must, after all, be the object of the pupil. Let him press on towards it without being unduly hampered by a demand for the over-elaboration of the diagram which accompanies his reasoning. Let him be encouraged to sketch figures of good size and shape. Let the development of the figure keep pace with the steps of the proposition. The pupil will then be more likely, when under the stress of examination, to produce a figure that will satisfy the examiner and the requirements of the subject.

Petits Contes pour les Enfants. La Fée Égarée; Sur la Montagne; Le Bal de Mademoiselle Papillon. 56 pp.; 47 pp.; 56 pp. (Blackie.) 4*d.* each.—Three pretty little tales, well suited for children. The author's name is not mentioned; they might be written by an English lady to judge by the spirit, but the French is excellent. There are no notes; the French-English vocabularies are good. The full-page illustrations deserve praise. Altogether these booklets can be warmly commended.

THE TEACHING OF VULGAR FRACTIONS.

By L. W. WILSDEN, M.A.

II.

(*Continued from p. 212.*)

TO deal in detail with the actual teaching of vulgar fractions, as a whole, would call for more space than is here at our disposal. The subject, however, naturally falls into two divisions, the first including a general consideration of the nature of fractions, together with the rules for their addition and subtraction, the second dealing with their multiplication, division, and simplification. By employing somewhat summary methods and by numbering the separate steps of the advance, it may be possible for us to cover the ground occupied by the first division with some degree of fullness; on the second division of the subject we must content ourselves with a few general observations.

1. If five buns have to be equally divided among four bears, it will be possible to give them a bun apiece, but the fifth bun will have to be cut into four equal parts.

Three thirsty men have to share one jug of water.

Show by means of these and similar examples—

(*a*) How the necessity for fractions arises.

(*b*) That the size of fractions varies according to the number of equal parts into which the whole is cut.

2. Names for the different kinds of equal parts, into which things are cut, are so rendered necessary.

3. Once things exist and have names, it is possible to put numbers before them to signify "how many"; *e.g.*, five elephants, seven spiders. In the same way it is possible to say two-thirds, five-sixths.

4. Set down in written words fractions are somewhat cumbersome, and accordingly a shorter way of expressing them has been devised by means of numerals.

Notice here the common confusion by which the numerical expression for a fraction is spoken of, as though it were the fraction itself. This is in reality just as foolish as it would be to assert that the printed word TIGER is the same thing as the real, live, snarling animal.

5. Take any one of the shapes and prove that the shaded part can, by subdividing all the original divisions each into the same number of equal portions and by varying that number, be shown and therefore expressed in a limitless number of ways.

6. The simplest expression of any fraction is that in which the smallest possible number of divisions is used; the numerical expression for a fraction in this form is said to express the fraction in its lowest terms. It is generally convenient to deal with a fraction in its lowest terms. To reduce a fraction, not already expressed in this way, to such terms, it is necessary to reduce the number of divisions in the whole of wh is a part. This is reversing the process last section. In each particular case the qu arises, "How many fewer?" The answ this is that it is possible to go on reducir number of parts so long as some part number of the new parts will exactly fi fraction in point. In other words, in orc reduce a fraction to its lowest terms, mal same number of times fewer divisions in (whole, (*b*) the fraction in point. That is t find the largest number that will exactly the number of parts in both the whole ar fraction, and make that number of times divisions in each. A way for finding s number has been devised. Teach G.C.M. many apologies for not being able to expla reasons of the working.

7. Show by actual problems that the ne for adding two fractions will frequently a

PROBLEM. *Two jugs are each partially What fraction of the one would be filled second were emptied into it?*

CASE I. Where the two jugs are both into the same number of parts.

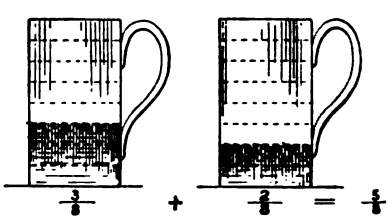


FIG. 1.

CASE II. Where the two jugs are not into the same number of parts; but w is possible, by subdividing the divisions of them, to get the same number of divis each.

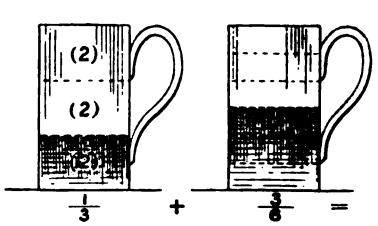


FIG. 2.

By subdividing each of the divisions first jug into two equal parts, the jug is c sixths. The fractions to be added can t expressed as follows:—

$$\frac{3}{6} + \frac{3}{6} = \frac{5}{6}.$$

CASE III. When the number of divisions and it is impossible to change the num divisions in one jug, so as to make it corr with that in the other.

In such cases it will be necessary to sul the divisions in both jugs, but differently

wo cases, so as to get the same number of ivisions in each.

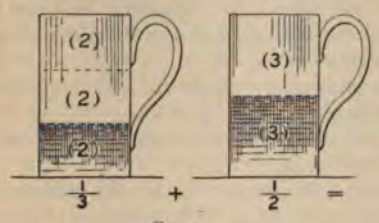


FIG. 3.

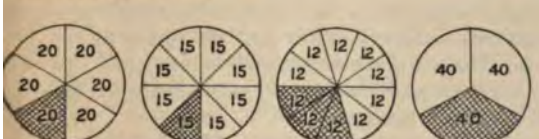
Subdivide the parts of the first jug into two visions each, and of the second into three, and ch jug will be found to be divided into six ual parts. The fractions can then be stated d added as follows:—

$$\frac{2}{6}+\frac{3}{6}=\frac{5}{6}.$$

8. Exactly the same procedure must be followed hen several fractions are to be added—that is to y, the number of divisions in the wholes of hich they are parts must be changed in some all cases, as may be necessary, in such a way to get the same number in all of them. When e number of fractions to be added exceeds two, becomes very difficult to tell what the number divisions will be, into which all the wholes n be altered. What is really wanted is some ay of finding this number with ease. It must the smallest number into which all the numbers presenting the numbers of divisions in the veral wholes will go exactly.

Teach L.C.M. with apologies for being unable explain the working.

Problem in addition worked in full, to show the thod.—*Four trippers, each provided with a n, met a fellow-tripper not so provisioned, and ntributed to his refreshment the shaded portions their several buns, as shown below. How much he receive in all?*



$$\frac{1}{6}+\frac{1}{8}+\frac{3}{10}+\frac{1}{3}$$

$$=\frac{20+15+36+40}{120}$$

$$=\frac{111}{120}$$

$=\frac{37}{40}$ of a bun were given to the destitute tripper.

FIG. 4.

When converting each separate fraction from original to its new form, use the following asoning.

"Each old division must be divided into x new visions, and we have y old divisions; therefore shall have y times x new divisions." The use this formula converts what is generally an ithmetical juggle into a concretely reasoned eration.

9. Subtraction needs no special notice. The jugs readily provide the kind of problem wanted, the pouring out of so much from one jug to another giving all that is required.

The barest possible outline of method has been given above, and the greatest economy observed in the matter of illustrations. In actual practice the cardboard shapes would, of course, be very much more in evidence, the argument in each case starting from them and being referred back to them at every step.

Of the numbered sections, perhaps the most important are those marked 5 and 6, containing as they do the principles upon which the operations performed in adding or subtracting rest. Yet, owing to haste caused by the desire to get to the rules that make a show on paper, this essential part of the subject is often slurred. The verbal explanations given in these sections are not satisfactory in themselves, but in class it is not the words spoken, but the actual visible shapes, the text of the words, which form the most important part of the explanation and carry conviction. With the aid of the shapes it ought to be possible to get the essential nature of reducing to lower terms really understood.

From the very first lesson, an abundance of concrete problems should be given for solution, and care should be taken that when any working with numerals is required, such numerals should rule small, the object being to give the maximum amount of thinking to the minimum of mere figure manipulating.

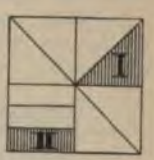
In practice it will be necessary to have several ledges in full view of the class, on which the shapes may be placed singly or in rows, as required. Should the architecture of the room not furnish the necessary features, an apparatus of movable ledges can easily be constructed to hang on the blackboard.

SPECIMEN PAPER I.

COVERING THE FIRST STAGE.

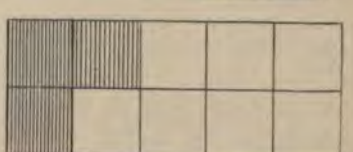
(Suggesting the kinds of problems which may be employed.)

1. Express (*a*) in words, (*b*) in figures, the parts of this square marked I. and II.



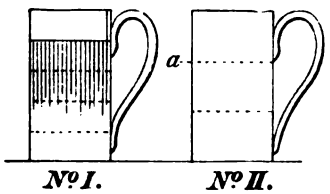
2. What fraction of this jug do you judge to be full? What fraction is empty?

3. Express the shaded part of this stick of chocolate in five different ways.



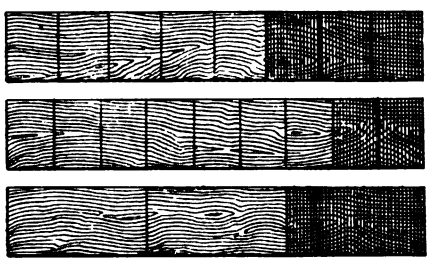
4. Express $\frac{5}{20}$ of a bun in its lowest terms, and draw

a bun, by marking round a penny, in which this fraction is shown shaded.



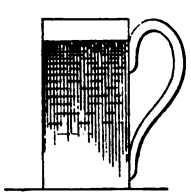
5. No. I. jug is full up to the point shown. No. II. jug is empty. How much liquid would remain in No. I. if No. II. were filled from it to the point marked *a*?

6. The shaded parts of these three planks had to be cut to waste. How much wood was wasted altogether?



SPECIMEN PAPER II.

COVERING THE SECOND STAGE.



1. (*a*) What fraction of this jug do you estimate to be full?

(*b*) Supposing the contents to be milk, if I drink ⅛ of the contents myself, and give two-fifths of the remainder to the kittens, what portion of the jug will still be full?

2. These are the palings which Tom Sawyer was set to whitewash. The white part shows exactly how much Tom did before he induced his friends to pay him for the privilege of completing the work.

(*a*) What fraction of the whole fence did Tom whitewash?

(*b*) What fraction did his friends whitewash?

(*c*) How many times more did the friends do than Tom?

3. These jugs represent the cider which the harvesters on a farm drink in one day. How much cider will be required for the whole harvest if it lasts 16⅜ days?

4. A farm carries 480 sheep at an average of 1⅓ sheep to the acre. How big is the farm?

5. A liner takes 5½ days to cross the Atlantic, and burns 3,000¾ tons of coal by the way. How much does she burn a day?

When the stage which ends with addition and subtraction of vulgar fractions has been conscientiously travelled, three courses lie open:—

(i) To go on with vulgar fractions in t the same spirit, using the concrete at ever

(ii) To abandon the concrete method in and to rely for teaching the remaining rules on numerals.

(iii) To abandon vulgar fractions altogeth a time and to turn to decimals.

On these three possibilities we will allow selves a few words.

If a concrete method is to be successful plied to the teaching of multiplication, di and simplification of fractions, the teache have to exercise a good deal more thoug ingenuity than is called for in the first st fraction teaching. Even when these are coming in full measure, some teachers m better results by trusting chiefly to numer this second stage. It will rest with the indi teacher to decide which method he can w the greater advantage. Personally I pref concrete method, but space is not here av for even outlining the steps by which s method might be carried into effect.

We have yet the third alternative to co It has become fashionable to say that de should precede vulgar fractions. Theore decimals involving, as they do, only a slig tension of principles already familiarised working of the four simple rules, hav doubtedly a claim to the first place. Prac however, the four simple rules are seldom on the basis of an understanding of the d notation, and therefore, as a matter o decimal fractions, when they do come, ar their ways completely strange and new. F more, decimals cannot be taught at all u concrete idea of a vulgar fraction ha thoroughly grasped, and this cannot be be the case until the first stage of vulgar fra to the end of addition and subtraction, ha accomplished. There are, therefore, strong arguments in favour of finishing fractions before considering decimals at al

(*a*) That it creates a sense of confusion t a subject, and then leaving it halfway to off to something else.

(*b*) That, having acquired the four simp mechanically, the learner will not feel ar ticular appropriateness in following them mediately with decimals.

(*c*) That, having acquired the four simpl mechanically, it will be well for him to r complete break, and to start afresh on a concrete basis. That this can best be d taking vulgar fractions as a whole.

(*d*) That, having once got the concrete i arithmetic into his head, he will be in a position to turn to the theory of notatio to justify the operations of the four simpl in the light of the wider knowledge that l gain from an acquaintance with decimal fra

This matter is, however, again one of that each teacher must settle for himself light of his own powers and feelings.

THE CLASSIFICATION OF CLIMATES.

By H. N. DICKSON, M.A., D.Sc., F.R.S.E.
Lecturer in Geography, University College, Reading.

FEW parts of his subject prove more troublesome to the teacher of geography than the classification of climates. A certain limited number of climatic types must be found, and their distribution in climatic regions must be discussed, but the information supplied by the ordinary text-book is usually meagre, and it is not always easy to know which way to turn for more.

The simplest solution of the problem is, of course, to begin with the standard set of conditions described as "planetary," the conditions which we may suppose to arise on any rotating planet which has an atmosphere and is warmed by a sun, provided the surface of that planet is uniform. These conditions are constantly approximated to on the surface of the earth where large uniform areas occur, as in the oceans, and they produce a system of belts of which the boundaries are parallel to parallels of latitude, and which moves northward and southward, following the sun. Thus we have the "doldrums," the "trade-wind" belts, the "horse latitudes," the "Roaring Forties," and so on. A knowledge of the positions of these belts, of their migrations, and of the type of climate experienced within each is quite within the reach of the average schoolboy, and will carry him far; but there are wonderfully few who attain to it. Trade-winds are known, and explanations of their causes more or less firmly understood, but it is rare to find a boy who knows where they blow, or can name a place which comes under their influence. Still more rarely does one come across any acquaintance with the equatorial belt, or the sub-tropical high pressure belts, or their movements; and the simpler generalisations concerning double rainy seasons, seasons of tropical cyclones, regions of desert and of winter rainfall, are a sealed book to many examination candidates who show quite uncalled-for familiarity with details of topography. Yet up to this point at least the facts are easily accessible; we need only name such books as "Elementary Meteorology," by Prof. W. M. Davis (Ginn), which contains all, and more than all, a teacher wants.

The next stage is somewhat more difficult, but still well within the possibilities of school work, and it must be reached if the pupil is to arrange the geographical "pictures," collected in earlier years, for himself. In this the departures from the planetary system which are due to the distribution of land and sea are studied, and the increased difficulty is, of course, chiefly due to the fact that the distribution of land and sea follows no simple law. Nevertheless, certain general features stand out clearly enough. Within the meteorological tropics the general movement is eastward, and hence sea influences are carried inland from eastern coasts, and land influences seaward from western coasts. Outside the tropics, in the west-wind belts, the arrangement is reversed. But over all is superposed the monsoon influence, which is largely a question of surface relief—for there is no draught in a horizontal chimney. This influence may entirely reverse the planetary circulation, as in India, or it may reinforce it, as in South Africa; the varied effects afford studies in physics of extreme interest which, in outline at least, are elementary. Again, the eastward movement in extra-tropical latitudes already referred to causes a gradual transition from an oceanic type of climate, with winter rainfall, in the west (continuous with the sub-tropical belt of winter rainfall on the equatorial side of it), to a continental type, with summer rainfall, in the east, merging with the monsoon summer rainfall nearer the equator. Here the distribution of climates in Eurasia, where the conditions can be fully developed, are easily described and remembered.

Another effect of surface relief can now be studied with advantage—the effect of elevated land upon a wind which is not causd by it. Under this heading come the increased rainfall on the weather side, the "rain shadow," and the foehn or chinook winds of the lee side.

The ordinary geographical text-book will scarcely guide the teacher to this point of his journey, although Davis's "Meteorology" is still more than sufficient. Experience proves abundantly that the pupil finds the more general methods suggested easier and more interesting than the immense amount of descriptive detail which seems to be the only alternative.

The way of further progress is indeed hard, for it means that the pupil, having completed a general survey, is fit to undertake the more minute geographical study of a region or regions. Unfortunately, the number of pupils who become so fit in this country is still small, but of late years it has become appreciable, and there are many reasons for believing that the increase in the near future will be considerable. For their more advanced work a closer classification of climates and climatic regions is essential, and the classification must depend not merely upon physical conditions, but to a greater and greater extent upon the needs of geographical applications, such as, for example, the distribution of plants. The facts of climatology are accessible in Hann's monumental "Handbuch der Klimatologie," of which part has been translated by Prof. R. de C. Ward (The Macmillan Co., 1903); but the question of classification of climates remains in some degree an open one, and the teacher cannot be expected to unearth from the original documents the different systems which have been proposed, and sit in judgment upon them. Fortunately, Prof. Ward has removed all need for this in an admirable paper published in the July and August numbers of the *Bulletin of the American Geographical Society*. In a short summary, with full references, the chief systems of classification which hold the field are described, and Prof. Ward decides that "that of Supan, taken as a whole, gives a rational, simple, and

satisfactory scheme of grouping, whose frequent use in climatic descriptions would tend towards system, simplicity, and facility of comparison." "It emphasises the essentials of each climate, and serves to impress these essentials upon the mind by means of the compact, well-considered verbal summary which is given in the case of each province described."

LANGUAGE TEACHING IN THE SIXTEENTH CENTURY.

By the Rev. H. J. CHAYTOR, M.A.
King Edward's School, Sheffield.

RIVINGTON GRAMMAR SCHOOL in Lancashire was founded by James Pilkington, some time Bishop of Durham, who was born in 1520 and died in 1575. His statutes for the working of the school were unusually elaborate, and provide a fairly complete picture of the working of a grammar school in the sixteenth century.[1] The general directions for the teaching of languages anticipate upon certain points some of the theories with which modern language and, indeed, classical masters are more or less concerned, and have, therefore, an interest which is something more than merely antiquarian.

It must be remembered that a "grammar" school meant primarily a school where Latin was taught. "Grammar," as most people know, was synonymous with Latin in the middle ages. The sixteenth-century schoolboy was expected not only to read and write, but also to speak Latin, and the Bishop's curriculum drawn up to promote these purposes is interesting in view of the oral methods now widely recommended in the initial stages of Latin teaching. "The Schoolmaster," says the Bishop, "shall see that his scholars speak Latin diligently in all their talk and places, and the Usher shall likewise, so much as is possible. But at the least the Usher shall examine them that be under him himself, and teach them what everything shall be called in Latin, and see that one of them often oppose another in such-like words. . . . In the school, they that can must speak nothing but Latin." The "orders for the master and usher to keep in teaching" are given under separate heads as printed below. As regards the general method of instruction, the Bishop, while he lays stress upon the use of select vocabularies to special subjects and upon the grouping of connected ideas, is a believer in the old translation method. Some of the works which he recommends for use are absolutely unknown to the writer of this article, who has never come across "Ludnici Vinis," if his name be correctly transcribed. The rest of the statutes deal chiefly with the organisation of the school. The preposterous hours of teaching and the exiguity of the holidays are to be exampled in most other schools of the period. With these preliminary remarks, we may leave the Bishop to expound his method and its objects.

[1] I have to thank Mr. E. J. Bonner, the headmaster of Rivington and Blackrod Grammar School, for the loan of a copy of the school statutes.

ORDERS FOR THE USHER TO KEEP IN TEACHING.

First, it is to be wished that none be admitted into the school but that can read; yet in great need the Usher shall teach such to read and learn the Short Catechism in English as have not learned it; and the other that can read and say it, shall enter first to the learning of the English grammar and rules, commonly called the King's grammar; and in learning to read much time is not to be spent, for the continual exercise of learning to read other things shall make it perfect.

As the young scholar is thus learning to decline a noun and a verb, the Usher shall daily exercise him with diversity of words in every comparison, declension, gender, tense, and conjugation, teaching him the English of every such Latin word; and examine him oft what is Latin for every such thing, that by this means he and others that hear may learn what every thing is called in Latin, and so be more ready to understand every word, what it signifieth in English, when they shall come to construction. As first to begin with Latin words for every part of a man and his apparel; of a house and household stuff, as bedding, kitching, buttery, meats, beasts, herbs, trees, flowers, birds, fishes, with all parts of them; virtues, vices, merchandise, and all occupations; as weavers, tanners, carpenters, ploughers, wheelwrights, tailors, tilers, and shoemakers; and cause them to write every word that belongs to one thing, together in order. And if this be done often and loud, that every one may hear and give ear, they will strive who shall learn and remember most Latin words, and will rejoice in it, one opposihg another who can do the best.

After that the Usher hath thus exercised his scholars in learning Latin words, and practising his rules, and declining words, then he shall use them to learn some short wise sentences out of "Ludnici Vinis" or Cato, and examine him what part of speech every word is, to give a reason why every word is put in such gender, number, person, case, tense, and conjugation; and for better exercising of his memory, he must be often examined in saying them and his rules by heart; and for helping his memory (because youth soon forgetteth) he shall cause his scholars to write these words and sentences in a book, so that both he may see his scholar's diligence, and the scholar not forget that that he learned.

When the young scholar hath been thus indifferently well exercised in these under exercises, and can answer indifferently well to all his rules, he may then be brought to the reading of "Dialogi Sacri Castalionis," "Apothegmata Erasmi," or some witty dialogue in "Colloquia Erasmi" or Petrarch's "Dialogues"; that so with daily exercise in reading he shall wax perfect in understanding; for perfection is not to be looked for in these young years, nor in these grammar rules, but rather in observation, noting, and learning how the best Latin writers have used to speak, and place words and sentences; and these are not so scrupulously to be used and sticked at, but some boy may have a sentence or two as he is able to take any other as many of the same book or the like, that joining altogether everyone may have the whole by hearing his fellows, and the meanest wit may attain to great perfection of it (*sic*). And for the better encouraging of young wits, the Usher shall often take like sentences in English himself, and turn them into Latin, making his scholars to repeat them after him, and to make the like in Latin themselves, that the younger wits may learn to do the like by themselves afterwards, when they be thus led into it, by hearing him.

These two last chapters before, and the next following, all be read openly in the school twice in the year, that to say, the first day of the term when the Governors me to the school after Christmas, and Midsummer; so at everyone hearing his duty read unto him, may the ore diligently learn and frame himself to the doing of it.

ORDERS FOR THE MASTER TO KEEP IN TEACHING.

After this, your scholars may be brought to the reading f Terence, his "Adelphi," or "Selectæ Ciceronis," and en to some verses, as "Psalmi Buchannini," "Epistolæ vidii," or "Ode Horatii," where both the matter and e metre is to be observed; and shall be a great help fterward to the making of a verse, which shall not be ard, if he then join that piece of his grammar rules ithal, to know the quantity of syllables and kind of rses, after that he hath been exercised in making exmples of every figure of grammar, and short epistles which must do weekly, following Tully's examples. To all ich aforesaid, "Erasm. Copiæ Verborum et Rerum, et conscribendis Epistolis," will give a great light, and ake the way more easy, if they be not so much tarried as laid before them like a pattern to learn, and to low. But all these things must be gotten by often exining and diligent practising, which the Master must rnestly look that his scholars do, and help to declare and d them in it.

When your scholars have been thus exercised in passing ough these exercises before rehearsed, with often repeat- them, and other like, to keep them in memory, their s shall be well framed to greater things. And now they y enter one part of the day to the Greek grammar, and h a one as is the shortest and plainest, if they be meet l willing thereto, not meddling so much with variety of tongues, as briefly setting forth the common tongue. d another part of the day to be exercised in Cicero e Senectute et Amicitia"; and the eldest scholars may rn Tully's "Offices," and "Tusculan Questions."

After that they have been exercised with variety of rds in their Greek declensions and conjugations, as was d afore, for the Latin grammar, they may have read o them, first, "Tabula Cebetis" in Greek, and then ne oration of Isocrates, and after Euripides. But ekly, besides this, they must write some epistles or ses, which they may more easily do, if they use often turn their lectures into English, and then into Latin, in by other words to the same meaning, sometimes in ses, and sometimes in prose: and after turning Greek Latin and Latin into Greek, and changing one kind of se into another, and verses into prose, and prose into se, observing the propriety of the phrase, the purest in words, and making the sentences full.

And now daily the Master must, more diligently than re, teach his scholars to note and observe the figures grammar and phrase, how the verbs and nouns be ed together after the fashion that uses; and how the heta and adjectives be joined with their nouns, after fashion of Texton's "Epitheta" and "Officina."

That all these long, painful exercises may have some er show of learning, with stronger kinds of persuading teaching others, the Master may now enter his scholar the rules of rhetoric, in Tully's books ("ad ennium"), to let him understand the divers kinds, parts of an oration, giving him examples out of other hors, and how to furnish his sentences with figures of sorts, as they be plainly there set forth in the fourth k, which will be more easy to follow by daily practice; he that cometh thus instructed with plenty of matter that he hath read and noted in other books before, and hath been diligently trained in these lower exercises, which were but introductions to this kind of perfection, now he may use to declaim profitably on any questions propounded after the example of Aphthonius, Quintilian, or Seneca, and for example, follow and to see the practice of these Rules. It shall bring great light to declare unto them the parts of rhetoric, and elocution out of the orations of Tully, after the scholars have interpreted it themselves before the Master in English, without any other help, so that they may try their own wits in this doing, as "Actio in Verrem," et "pro Cluentio," "pro Lege Manilia"; which may be patterns to follow for his scholars, with Sallust and Virgil.

On Saturdays and Holy Day Eves, the Usher shall exercise his younger sort in learning their Short Catechism in English, in the Common Book, and the same days to all sorts the Master shall read Mr. Nowell's, or Calvin's Catechism, taught in Calvin's Institutions, willing the elder sort both to learn it by heart and examine them briefly the next day after, when they come to school again, before they go to other things, how they can say it, and shall commend them that have done well, and encourage others to do the like.

Both the Master and the Usher must see diligently that all and every one of their scholars, as their wits will serve, do exercise themselves daily in speaking Latin, and in making some wise sentences in Latin for the younger sort, or other divers matters, that shall be given them weekly; and the elder sort must be exercised in devising and writing sundry epistles to sundry persons, of sundry matters, as of chiding, exhorting, comforting, counselling, praying, lamenting, some to friends, some to foes, some to strangers; of weighty matters, or merry, as shooting, hunting, &c., of adversity, or prosperity, of war, and peace, divine and profane, of all sciences, and occupations, some long and some short; or else in making verses, orations and declamations, and noting the parts of them, in such things as they do read according to the rules of rhetoric; in turning also verse to prose, and contrary wise; out of English or Greek into Latin, or from Latin or Greek into English; out of orators into poets, and poets into orators; in rehearsing to their Master that which hath been read unto them in other good pure Latin words to the same purpose and meaning; in noting the phrase Capia Synonima, Contraries, the grammatical or rhetorical figures in words and sentences. The younger sort must be exercised in repeating their rules often, and the elder sort in teaching their inferiors; committing many things to memory, and writing them in their paper books, that so both the memory may be confirmed, and they may yearly see how they have profited, and then correct those things which were rudely and imperfectly run over in the beginning; for time and labour must perfect all imperfections. And these things shall better appear how profitable rather in exercising of them by practice, than declaring them by words.

A History of German Literature. By W. Scherer. Translated by Mrs. F. C. Conybeare. Edited by F. Max Müller. Vol. i., xv.+401 pp.; vol. ii., vii.+377 pp. (Clarendon Press.) 3s. 6d. net per volume.—This book is well known in the demy 8vo edition (the price of which is now 15s. net). The edition before us is cheaper, and will therefore be welcome to many. The appendices and bibliographies have been omitted, in order to keep the size and price of the volumes within reasonable limits.

CHEMISTRY IN AMERICAN SECONDARY SCHOOLS.

By T. M. LOWRY, D.Sc.
Westminster Training College.

A PAPER on recent practice and results in the teaching of chemistry in secondary schools of the United States was read by Mr. W. C. Geer at the tenth annual meeting of the New York Science Teachers' Association at the end of last year, and is printed in the April number of the *School Review* (University of Chicago Press). A synopsis of the paper should be of interest to science teachers in our own schools.

Mr. Geer states that it was his "pleasure" to read the chemistry note-books presented for entrance to Cornell University by those who entered without examination. With the devotion of an enthusiast he has tabulated the courses pursued in the different schools and photographed specimen pages of the different types of note-books. His observations make it clear that the American teacher suffers from the same troubles which pursue his English colleague, and that vicious methods of accelerating the pupil's progress are, possibly, commoner in the United States than they are in England. Perhaps the most harmful method consists in the use of a printed text-book in which the alternate pages are left blank in order that the pupil may record the fact that he has done that which he was told to do. Two examples of this type are given. In the first the pupil records his observations with an economy of labour that must have delighted his eager soul—"Followed instructions. A black, mirror-like stain of metallic arsenic was deposited upon the porcelain." The second example is like unto the first—"I set up the apparatus as directed, and mixed the sodium acetate, sodium hydroxide, and quicklime, and heated them. I collected the gas, and found it (was combustible) burnt. . . . I concluded it was methane." It is evident that experiments 35 and 71 would not be likely to make any lasting impression on these obedient workers, and the argument that a gas which burns must be methane shows a readiness to jump to conclusions that is quite characteristic of those who adopt this method of working.

In another curious type of note-book the page is divided into six compartments labelled "Apparatus," "Conditions," "Reactions," "Sketch of Apparatus," "Observations," "Conclusions," whilst a similar classification is frequently made by the pupil himself in the margin of the note-book. These elaborate arrangements for economising time and securing uniformity of arrangement not only reduce the amount of thinking required of the pupil, but encourage a slovenly style of writing which would not be permitted in any other branch of school work, and certainly ought not to be sanctioned in the laboratory. Happily, some of the American schools have adopted the practice, with which English teachers *are already* familiar, of treating the laboratory note-book as one of the most valuable n forming a good literary style, and of the pupil in habits of clear and accurate tion. In such cases the description of periment is made to include all the esse gredients—motive, description, observatic conclusions—but these are left to displa selves unlabelled, as part of a continuous, narrative. The importance and, indeed, th sity of this training are clear to all those v the American author, have to continue th ing begun in the schools.

One other point is worthy of mention. third of the New York schools the lat work is taken in periods of three-quarter hour! Under such conditions it is not wondered at if the teachers are driven t pernicious methods in order that their pup be able to report progress of any kind bef bell rings for the next lesson.

THE LATE MISS BEALE.

By MRS. CLOUDESLEY BRERETON,
Formerly Acting Principal of Homerton Colle Cambridge.

THERE was no more striking figure the true pioneers of girls' secondary tion in England than Miss Dorothea whose death on November 9th caused a n loss.

Miss Beale, born in 1831, was the daug a surgeon, himself keenly interested in tional, sociological, and literary matters women of her mother's family were rem in their day for scholarship and strong cha This environment undoubtedly influenc growing child, though it did not protect he the "noxious brood of catechisms" of t Mangnall's questions, and the like. machines, which had succeeded in grindi originality out of generations of girls, only to make Dorothea Beale leave school with satisfied desire for fuller and more org knowledge.

She taught herself Euclid, read widely, at lectures, studied mathematics under the Gr Professor of Astronomy at Cambridge, a came a student of Queen's College, H Street, when it was opened in 1846. She came under the influence of Trench and Fre Denison Maurice. The educational faciliti Queen's College were to her the revelation new world, after her conventional and quasi ventual bringing up. She was afterwards m matical tutor at Queen's, and her enthusiasm her to visit the schools and colleges of fo countries in the vacations.

In 1858 the headship of Cheltenham Co became vacant. There were but sixty-nine pu and after being in existence nearly four year outlook of the school was disappointing. before many years passed Miss Beale ha tactful steps, entirely remodelled the curric started St. Hilda's Hall, Cheltenham, a d

re she herself trained her teachers on
ines, and founded besides St. Hilda's
ord.
ustration will show with what pre-
e had to contend. Realising how the
ne exact sciences would help to balance
of girls, Miss Beale decided to teach
But she feared that word on the
would close the school, so she had to
necessary teaching under the compre-
le physical geography, there being no
to geography, as few boys studied it.
Miss Beale, with Miss Davies and Miss
called upon to give evidence on the
education of girls before the Schools
Commission. Thoughtful and active-
ople were alarmed by the report of the
n, and awakened to the necessity of
g good secondary schools for girls
t the country. The reformers found in
a valuable ally. Not the least import-
ne of the inquiry was the successful
ent of the Girls' Public Day School Com-
the creation of the famous Haber-
chools. One of the latest foundations
education, St. Paul's, was also largely
r untiring efforts and those of Sir
tch.
ways than one she recalls Thring of
n, for her life-work was, after all, the
nt of Cheltenham College. Its growth
est measured by the facts that when
total capital was only £2,000, while at
f its year of Jubilee the annual income
£60,000.
y Miss Beale was rather a one-sided
of women's education; but those who
best are well aware how groundless
upposition. Though she herself was
to the College," to use her favourite
r chief ideal was to turn out truly
vomen.

PROMOTION OF NATURAL KNOWLEDGE.[1]

H. E. Armstrong, Ph.D., LL.D., F.R.S.

ook is to be recommended to readers
HE School World, both ordinary and
aordinary, as one to be perused care-
pondered over at leisure. Mayhap its
l be a strange one to most, yet worth
to master. Its face is fair to look
t trying to the eyes to read but printed
rly, with lines ranged wide apart
s so that the student may have
tunity of reading much in between
illustrated with reproductions of pic-
reat men which might well be framed
up on school walls, as a contribution
at "thinking in shape" Thring wisely
ch stress upon and which most of his

[1] Society or Science in the State and in the Schools." Huggins, K.C.B., O.M., &c. xv.+131 pp. (Methuen.)

colleagues therefore, out of what Mark Twain might designate sheer cussedness, have quite carefully avoided. Most charming of all, perhaps, are the "initial designs" by the accomplished wife of the venerable author. Among these is one (obviously allegorical), of special interest to schoolmasters, of the City of London School (emblematic, it is to be supposed, of our English secondary schools) wrapped in the deep gloom of a decadent, *wissenschaftloses* curriculum; another, it may be imagined, typical of the school of the future, depicts this as an elaborately constructed beehive carrying the motto *Nullius in verba*—busy bees typifying pupils as doers not dreamers. It is a book to place in the library of every school and one which might be used with profit as a reader in the upper forms—as it goes far enough back (to Charles II.) to be reckoned among literary works proper for those whose minds are thought to be fitly kept free from all taint of modern knowledge. The Board of Education will do well to include it in the official course of English literature prescribed for grant-earning schools.

It was a happy thought on the part of the author, the gifted and distinguished astronomer, Sir William Huggins, the late president of the Society, to republish annotated excerpts from the addresses which he delivered during his term of office. Redolent of artistic feeling and bearing evidence of culture on almost every page, the book may serve to hold up the mirror to the narrow humanists who, unlike our Primate, far from mistrusting, are in full sympathy with—

> "the poet who discerns
> No character or glory in his times
> But trundles back his soul five hundred years
> To find a hero or an enterprise."

The early history of the Royal Society is briefly sketched in the opening chapter. Founded two and a half centuries ago, particularly for the study of what was then called the New Philosophy or Experimental Philosophy, its growth has been coincident with that of experimental science. Sir Isaac Newton was president of the Society during twenty-four years. He presented to the Society in 1671 a reflecting telescope made with his own hands which appears to have been the first reflecting telescope actually constructed and directed to the heavens. Another of its most distinguished presidents was Sir Humphry Davy, the discoverer of the compound nature of the alkalies and alkaline earths and the inventor of the safety lamp. Faraday's marvellous researches, which have made electricity the servant of man, were all described in memoirs printed in the Society's *Transactions*. These are things which English boys might well be proud to know of.

The rest of the book should be for the most part serious reading for schoolmasters—especially the sections which respectively bear the headings: I. "The Supreme Importance of Science to the Industries of the Country, which can be secured only through making Science an Es-

sential Part of all Education"; and IV. "On the Profound Influence which Science, represented by the Royal Society, has had upon the Life and Thought of the World; and the Place of Science in General Education."

Prophetic passages abound throughout the book, such as the following:—

"A primary and immediate need of this country is the putting of more science into the education of the country. Not the teaching of the mere facts of science—which by itself is of little good—but the training of the intellect by strict scientific methods and principles.

"In the coming century the race will not be to the country of the athlete nor to the country of the classicist but to the country whose men, having been trained under the rigorous methods of science, have the knowledge and especially alertness of mind to enrich themselves out of the open and inexhaustible treasury of Nature" (p. 36).

"I do not surely exaggerate the importance to the nation of the existence of the Royal Society, if I claim for it to have been, during the last two centuries, the faithful guardian of the true Palladium of the Empire, too long neglected and even forgotten by its peoples.

"*Scientia vinces*—whether it be on the field of battle, on the waves of the ocean, amid the din and smoke of the workshop or on the broad acres under the light of heaven; and assuredly, in the future, even more than in the past, not only the prosperity but even the existence of the Empire will be found to depend upon the 'improvement of Natural Knowledge'—that is, upon the more complete application of scientific knowledge and methods to every department of industrial and national activity.

"It is obvious that it must be so, for it is only through an increased understanding of what are called the laws of Nature—the sequence and the interaction of natural phenomena—that we can hope to bring Nature into complete subjection and to make use of her illimitable forces to work out our own ends" (p. 116).

Coming from a man who has no axe to grind but is merely a sympathetic onlooker, deeply desirous of directing his countrymen into right paths, such expressions are of no slight significance. Teachers who are in some degree mindful of their duty to the State will do well to give heed to the considered words of such a man.

A STORY-BOOK OF ENGLISH HISTORY.[1]

REMEMBERING "Kim" and the "Just So Stories," we take up Mr. Kipling's interpretation of certain phases of "Old England" with no ordinary eagerness. We are not disappointed. Indeed, it may as well be said at once that "Puck of Pook's Hill" is a work of genius. This does not mean that it is above criticism, but it means that in a high and notable way it stands by itself. There is no other book like it, and no one but Mr. Kipling could have written it. Most people know what Mr. Kipling can be at his best, but this book has a charm peculiar to itself. For here the creatures of the author are not beasts of the jungle, or lamas, or motors, but the people of our own past, the dwellers in the dim, far-away uplands of English history. The theme is handled with curious art. The historical technique is remarkable although, unfortunately, the battle of Hastings has to appear disguised as the battle of Santlache; the device of Puck and the two children, Dan and Una, whereby the whole book is knit together, is beautifully carried out, and charming in itself. But as story follows story one feels that even more notable than such things is that queer and subtle intimacy of the author with the undersides of character. History-books deal chiefly with the public and overt aspects of character, but most of the life of a man or a nation is not lived either in public view, or for the public edification. The true realm of human activity is always behind the scenes. Here lies Mr. Kipling's mastery. He has immense sympathy with, and understanding of, this vague half-illumined region in the historic being of men and nations. He moves amid the twilight of long ago, and throws his lamp on what "must have been." He answers the speculation of the child and of the elder, "I wonder how it felt to be alive then." He recovers for us the personal drama of the past, not as associated merely with the great ones of the earth, but as associated with any kind of person who happens to come handy to his purpose; and thus he often finds his reward where his predecessors in historical romance have not ventured to penetrate.

Opinions will vary as to the relative merits of the ten stories which the book contains. Perhaps the most brilliantly coloured are the three which refer to the Roman occupation. Yet these stories are not perhaps the best. There is a flavour of modern imperialism about them which, though not distasteful, makes them less convincing historically. The Great Wall, too, is overdone. It was an impressive work, but it scarcely had the Babylonian bulk and thronged excitement of Mr. Kipling's narrative. On the other hand, the three stories, "Young Men at the Manor," "The Joyous Venture," and "Old Men at Pevensey," present with extraordinary vividness the kind of incident of which the complex drama of the Norman Conquest must have been compacted. How delightful to realise that the trite maxims of constitutional historians rest upon personal character and experience! For example, we can all recall familiar sentences which tell us that the English have always gained their political reforms by appeal to custom and precedent. Here is the idea as it occurs in "Young Men at the Manor."

"'The English are a bold people. His Saxons will laugh and jest with Hugh, and Hugh with them, and this was marvellous to me—if even the meanest of them said that such and such a thing was the Custom of the Manor, then straightway would Hugh and such old men of the Manor as might be near forsake everything else to debate the matter—I have seen them stop the mill with the corn half-ground—and if the custom or usage proven to be as it was said, why, that was the end

[1] "*Puck of Pook's Hill.*" By Rudyard Kipling. 306 pp. (Macmillan.) 6*s.*

it were flat against Hugh, his wish and com-
derful!'
aid Puck. . . . 'The Custom of Old Eng-
re before your Norman knights came, and it
n, though they fought against it cruel.'
said Sir Richard. 'I let the Saxons go their
y, but when my own men-at-arms, not six
ngland, stood up and told me what was the
e country, *then* I was angry.'"

oric reverence for custom, and the as-
apacity of the race, could not be better
In the same story we see how Norman
came to combine together to protect
roperty, in this case the swine of the
he same idea of Anglo-Norman unity
"Old Men at Pevensey," in which
tself gains upon the imagination as
of England. Picture follows picture.
Wall flashes into reality; we see how
marched, and what a Roman road
we understand what was the fear of
men—"the raven-winged ships from
where Rome does not rule." In
ie Draft," a story of a craftsman that
nove with an easier motion than the
d and deep-set passion of the English
ntry life is justified by the description
arm, and what it meant for those who
. "Dymchurch Flit" is in another
ie, regretful, humorous, significant in
f what was lost as well as gained by
tual and religious abjurations of the
entury. It shows us Mr. Kipling's
its highest cunning, for we feel that
s never far from his veil of enchant-
fantasies.
ries are strung together, in Mr.
vay, by songs. Of these the "Child-
" at the end will, it may be predicted,
nanent currency. The rest are not
remarkable, except, perhaps, the
s' Song," which is entirely delightful,
eryone must see at a glance, is in
"go" exactly what it ought to be.
en, is a book which is both literature
nd literature of instruction. We may
as a story-book; we may welcome it
o history teaching. But if it is to be
o the service of the pedagogue, one
ions may be given. "Puck of Pook's
t intended for the nursery. Dan and
t babies. Some sense and knowledge
presupposed. So magical is the story-
that even a little child may take
hearing the book read, but the joy
e far greater if the book is reserved
knowledge of English history has been
ther ways. Again, it is to be hoped
book will never become a "lesson
ne by one books intended purely for
and delight are being prejudiced and
the eyes of their young readers by
with task-work and punishment. The
aws, fortunately, will long preserve
's stories from the annotator and his
"abridged edition." But the right course with "Puck of Pook's Hill" is to keep it outside the schoolroom altogether. Put it in the way of boys and girls, and let them read it for pleasure. Left to itself, it will find readers enough, and such readers will discover of their own motion a new interest in their history lessons.

THE LITTLE CHILD.[1]

THE little child has been for years under the microscope. He is the special prey of the man of science, and no doubt he deserves it, for in him are locked up our secrets. But the psychologist is running the more exact man of science hard, and it is not an uncommon thing to find whole chapters of books which are simply printed cinematographs of what a baby does. The ordinary reader stands in amaze, the ordinary teacher smiles, and the ordinary mother, when she is presented with one of these chapters, throws the book impatiently away. It is from America chiefly that the microscopic study of the infant comes, and it is to be hoped that positive results will follow. Thus, "First Steps in Mental Growth," by Prof. Major, is really nothing but a detailed account of Prof. Major's baby, and solemnly we are asked why the baby ("R." is his name) dislikes the slamming of a door. It is of no use to say *omne ignotum pro terribili*; it is of no use to refer all fears of a child to the instinct of self-preservation; nor does it seem to be germane to the question to inquire what "R.'s" parents are like, and what their parents were like. The book is interesting, and specially so to those who work on the same lines; and when a large number of such books have been amassed there may come some generalisations. It may be found then that these very generalisations have been in the possession of all mothers for centuries.

Of a very different character is the hopelessly unscientific volume called "Old Maids' Children," by Edith Escombe. It measures no child; it does not record at what month Johnny saw himself in the looking-glass; nor does it say on which of three occasions Johnny was afraid or not afraid of the pug-dog. Instead, it tells us that courage may be taught; it condemns the increase of neurotics in the nursery; and it offers a suggestion for new nurses, new carpets, and new toys. It is a singular plea, in very simple language, printed very well and clearly, and prefaced by one admirable page, a plea for self-control. We don't think Miss Escombe would laugh over the scientific study of the little child and over the crammed curriculum of his elder brother. Indeed, we are sure she would cry—in secret, for of crying in public she does not approve. Whoever would

1 "First Steps in Mental Growth." By D. R. Major. 1–350 pp. (Macmillan Co.) 5s.
"Old Maids' Children." By Edith Escombe. 1–275 pp. (Swan Sonnenschein.) 3s. 6d.
"The Child and the Curriculum." By Catharine Dodd. 1–172 pp. (Swan Sonnenschein.) 2s. 6d.

ask for encouragement in the humane task of bringing up little children in a wholesome way would do well to read this book with its ill-fitting title, "Old Maids' Children."

The elder child is catered for (sumptuously) in "The Child and the Curriculum," by Miss Dodd. It is a pity that the interesting part of the book, the antiquarian part, is so very scrappy. Why did not the talented writer leave it to someone else to write one more work on curricula, and give us a really good production on old school-books and old school-thinkers? The field is almost untilled, except for Hazlitt, Tuer, and Furnivall. However, we have to review what is there, and we are, of course, disappointed. Why is the teacher so terribly anxious to run his child in a rut? If six distinguished men of to-day were to be asked their opinion of their own early school-days, should we not hear scathing condemnation of the teacher and the rut? After all, what is a "curriculum"? Only a racecourse, narrowed down, of set length and fixed boundaries. And in it teachers run, and out of it little children are always trying to escape. When will people learn to trust the teacher more, and to believe that it is the teacher, and not the curriculum, that brings out what is in the child? Thus in this book we read of *devices* to make instruction interesting—*because we have not obtained our teacher yet*; we see a carefully-mapped-out lesson on Solomon and on the study of a Greek boy—mapped out *because we have not obtained our teacher yet.* And this pemmican will not produce him.

In Miss Dodd's book there is scarcely a word about the body, the only child's asset of which we really know anything; the best book written for children on the Old Testament is unnamed, while the work of Canon Ottley, manifestly not for children, is highly praised; and, as a specimen of what the teacher may accomplish, King Solomon (perhaps the most unsuitable study for children in the whole Bible) has a series of lessons set out for him in which the salient features of his life and the associations clinging to his name are ignored.

We are thankful to the author for the architectural lessons and for her half-outspoken condemnation of co-education—half-outspoken because, being a lady, she dare not say her whole mind in print. The book bristles with good advice, with good time-tables, and with good theories—all dedicated to the incompetent teacher.

The perusal of these three works suggests that, if children knew and could be allowed to protest, they would take Miss Escombe's book in their hands and, showing it to the scientific microscopists and makers of curricula, would say, "We have heard enough of Froebel and Herbart, as now interpreted; can you not give us a little—love?"

How to Keep Well. By Dr. Andrew Wilson. 140 pp. (Chambers.) 1s.—An interesting little book, which might be read with advantage by everyone. The author's name *is sufficient guarantee* that the statements made are accurate *and to the point.*

THE BIRDS OF ARISTOPHANES.[1]

MR. ROGERS again presents us with one of his delightful translations, for it is the translation which makes the merit of this work. There is useful matter in the introduction and in the notes, which are original and suggestive; but we do not feel so sure of Mr. Rogers the critic or the grammarian as we do of Mr. Rogers the poet. In criticism, he is remarkable for independence and good sense; but he is not a diviner like Bentley or Cobet; his mind is rather literary. We are glad that he has restored the true name to Peisthetairos; and it is just in such cases, where the public have been content to follow like sheep into an obviously wrong path, that Mr. Rogers is useful. The phrase μάλλά (109), for example, clear as its meaning is, presents more than one problem for solution, and the MS. variants are instructive; but none of these points are touched on, the variants being just recorded in the critical appendix. This is a typical instance of Mr. Rogers's point of view. He keeps the right reading, and gives materials for anyone who prefers a wrong one; but he passes on without either defending his text or explaining the use of μὴ (or μά) and the vowel of the crasis. We are not in any way complaining of this; we mention it merely to show what the reader will find in the book, and what he will not. The critical notes, generally without comment, expose the shameless tampering of editors with the text, or their sheep-like imitation one of another. The notes are at their best when (as on 591) the editor exposes some ignorance of common facts which may be at the bottom of conjectures.

A useful account is given in the preface of the birds described by Aristophanes, which are identified (as far as possible). We may mention, by the way, that δρῦς originally meant a tree, so that δρυκολάπτης has no special reference to oaks. The old sense remains in ἀκρόδρυα. "fruit trees." There is also an excursus on the musical representation of birds' notes. The running commentary is mainly of a literary kind; it explains the dramatic points and situations, and quotes illustrative parallels.

But Mr. Rogers's fame rests on his translation; and this time how brilliant a subject he has! Elsewhere, Aristophanes is witty and pretty—his choruses are always good, always have a fine lyrical rhythm; but the plot or subject may be topical, or vulgar. But where has the poet a plot so fitted for the exercise of his powers? Let the Germans, if they will, see an elaborate political allegory in the *Birds*. Mr. Rogers will have none of it, and we are content to follow him. The *Birds* is of imagination all compact a thing of beauty and grace incomparable satirical it is true, but the pervading atmosph is of bright irresponsible happiness. And

[1] "The Birds of Aristophanes." The Text Revised, with a Trans into corresponding Metres, Introduction, and Commentary. By W Rogers. xcii.+305 pp. (Bell.) 10s. 6d.

here at his best. Others may rival him ogue, but, we think, none in the lyrics. inexhaustible stock of rhymes and his le high spirits, he carries his readers 'e are heartily grateful to Mr. Rogers anslation, and wish more power to his

ARY EDUCATION IN SCOTLAND.

d report of Dr. J. Struthers, the secretary to Board of Education, deals primarily with ducation in Scotland in 1906, but it contains s of value to schoolmasters and schoolmistresses secondary schools, wherever these may be

our usual practice, we have, in selecting the aragraphs from the Blue-book (Cd. 3207, given prominence to remarks on methods of e various subjects of the school curriculum, at teachers find these notes of service in class- e.

—If it cannot be said that the complex problems the teaching of English have been satisfactorily ur schools, progress in the right direction is ing made. History and geography have long ded as mere appanages of English proper. doubt, an intimate connection between English on the one hand, and between history and on the other. The due co-ordination of the always form a prominent feature of every well- eme. Equally, however, must their independ- alised if they are to be adequately taught. ewed under the aspect of language-study, has ffinity with geography as linked to practical

schools the literary side of the teaching is very weak. Even the knowledge of literary dentally revealed was often vague and chaotic. feared that there are not a few teachers of the have a very imperfect realisation of the ends ey ought to aim. To them I would commend observation of one of our most experienced

are three points which clearly need to be in the teaching of literature—a general know- ate as far as it goes, however little way it may great names and movements of English litera- ing for beauty in language and in rhythm; and of what Matthew Arnold used to call 'archi- the operation of the intelligence in works of agination. None of these things, in simple yond the capacity of boys and girls of seven- out them I do not know what the teaching of eans."

n from the work done by candidates that the glish in its vocabulary and idiom is still very e precision that has been attained in the study sical languages. Drill in analysis and parsing iously done. But these exercises are too often ends in themselves, whereas they should be llary. Like paraphrasing, they should serve ids in the cultivation of correct understanding. they often are, dogmatically and without regard grammar, they have a numbing effect on the linguistic sense of the pupils. Let me quote some interesting remarks on this point by the chief examiner:—

"Anything archaic in speech or syntax, however common in classic authors, seems to baffle the candidates; and this, like some other weaknesses, I attribute to their unfamiliarity with literature. The examination helps to form the speech of a people. Clearness, logic, and exact modern usage seem to be well taught. The danger lies in the other direction; the best English speech has always preserved a freedom and elasticity which the grammar lesson is apt to impair, and which can be learned only from the reading of the best authors, or from conversation with the best speakers. With the progress of popular education a kind of miasma of pedantry is creeping over England and Scotland. There is no practical cure for this save in literature. In our schools the subjunctive is moribund or dead. But it lives in good writing, and will be revived by the study of good writing. And so also with other forms which are killed by the unintelligent and dogmatic teaching of logical grammar. 'This House to let' is good English. It is being driven out by 'This House to be let,' which is pedantic, bad English."

HISTORY.—History as studied in Scottish schools is practically English history from 1066 to 1815. Within these limits there is sound teaching of the facts and some appreciation of the picturesque side of the past, although in the higher grade one might not unreasonably look for greater power of generalisation and of realising causal connection, and for a more genuine interest in the economic and constitutional aspects of the subject.

The lack of comprehensive grasp and the apparently entire neglect of Scottish history are, however, grave defects. As to the existence of these weaknesses, there can be no manner of doubt. I have been much impressed with the remarks made upon the latter point by one of our most trusted advisers, himself an Englishman:—

"I must once again animadvert on what I cannot but regard as the most discreditable ignorance of Scots history universally shown by the candidates. The parrot-like use of the word 'Britain' seems to me to have done much more harm than good from the point of view of Scotsmen who take a pride in their separate history. Because we must be careful to talk of the British at Waterloo and Inkerman, the children make a point of talking of the 'British' victories at Crecy or Agincourt, and take satisfaction in the idea that William of Normandy conquered 'Britain.' The essays on the Stuarts revealed blank ignorance of Scots history before the union of the crowns. To most candidates James VI. was as devoid of parents as Melchisedek. . . . Whatever may be said in general about 'particularism,' it is surely worthy of note that Scots children, whose work gives ample evidence of Scottish idiosyncrasies and even prejudices, are totally uninstructed in the history of Scotland. I do not know what text-books are in general use, but I am quite sure that they were written entirely for the benefit of English children, and I am also sure that the teachers of the candidates whose work I have seen are either unable, or think it unnecessary, to supplement the contents of those books by telling their pupils anything about the history of Scotland."

What is wanted—and wanted elsewhere than in Scotland—is that the history of our country should be studied, not from an English or a Scottish or an Irish, but from a truly British point of view. The pupils should be taught to have regard to the development of these islands as a whole. This is the essential. Over and above, however, for Scottish children, such work should be supplemented

by some more detailed information about Scotland; and for the older pupils the lines might well broaden out gradually into a general view of the great movements of European, if not of universal, history.

GEOGRAPHY.—It becomes increasingly evident that geography is still very far from becoming the educative subject which it is capable of being made. In most schools it seems to be conscientiously taught so far as bare facts are concerned. But better organisation of the course is wanted almost everywhere, and practical instruction is virtually unknown. The specially qualified teacher is urgently called for. Questions demanding generalising power were left untouched. Isolated details were baldly stated, and there was little attempt at discussion. Physical or realistic geography, which is nothing but an extension of nature-study, obviously requires to be encouraged.

CLASSICS.—Tradition still forces into the Latin classes a considerable number of boys and girls who would derive more lasting profit from an easier or, at all events, from a different subject. From this point of view the continued popularity of the language is not entirely matter for congratulation. Managers and parents have yet to realise that, if Greek is for the few, even Latin is hardly for the many. On the other hand—and this is but a particular application of a principle to which I have already referred—those pupils who are gifted with a genuine aptitude for classical studies ought to be at liberty, during the last three or four years of their school life, to devote much more time to ancient languages than is usually possible at present. Not until that principle is more widely accepted will the general level of classical learning in Scotland be appreciably raised.

It is gratifying to note that there is general agreement regarding the high average of qualifications possessed by classical teachers in secondary schools. Formerly there was a vague belief that a limited range of knowledge was sufficient to justify a man's being entrusted with the care of a class of beginners. That dangerous heresy is rapidly disappearing. It is becoming more and more generally understood that scholarship must begin at the beginning. And it seems certain that an effort after better methods is discernible almost everywhere. But a great deal remains to be done. Grammar is still too generally taught as an end in itself, and, in Greek at least, old-fashioned grammatical text-books have not quite lost their vogue. Quantities are receiving much more watchful attention, with the natural result that scansion, as tested by the written papers, is gradually becoming less unsatisfactory. But the necessity for a uniform system of pronunciation is not yet universally admitted. Repetition is practised with greater regularity. It is still, however, too frequently regarded as something outside of the ordinary work—a display for special occasions. As a matter of fact, it is intimately connected with the intelligent reading of the ordinary text, and is only one phase of the training of the ear—an aspect of linguistic study which is very imperfectly understood. The most serious blemish continues to be the neglect of *Realien*, the lack of a proper background of history and antiquities. The teachers are no doubt sorely tempted to err in this way. But they would probably find it better, even from a strictly utilitarian point of view, to do more to interest their pupils in the life and literature of Greece and Rome. Here again, however, the real remedy will be found in a frank recognition of the necessity for concentration, if Greek and Latin are to get their due.

FRENCH.—It would appear that teachers still need a great deal of help towards understanding the real aim of modern ways of treating foreign languages. Many d realise that, if success is to be attained, the "direct" method must be whole-hearted, ener thorough-going. There must be no sloven countenancing the idea that the precise ending gives to a word is not a matter of any particula Neglect to guard against this danger inevitably method itself into discredit. As soon as the pen to paper, the defect betrays itself in false cc wrong genders, and in gross syntactical blund these are the very things that, properly applied, method is so well calculated to banish from the s

Several inspectors report that, in their opinio composition is overdone. It has, of course, a its own in every properly organised scheme of study. At present, however, there would seem much attempted in this direction, and too little paid to "imitative" composition—that is, co based on material with which the pupils are familiar. Retranslation, for instance, is almost as a systematic exercise. I am glad to believe amount of literature read is increasing. But e time might very profitably be devoted to what mus be a most important side of linguistic study.

Pronunciation continues to improve. In this c I would like again to refer to the arrangement interchange of student-teachers between France a land. The system is developing rapidly along sat lines. During the past session eighteen young teachers were sent to gain experience in the sc France, abundant leisure being allowed them to their own knowledge of the foreign language. In t way seven young French teachers were received in schools, and the enlightened policy of those manag lent their assistance in the matter has, so far a learn, been amply justified.

Generally it may be said that in regard to Fr are in a stage of transition. The leaven of i methods is steadily working, but its effects can h expected to make themselves fully felt for a year to come. The written papers furnish clear proof in more than one respect.

GERMAN.—One regrets to find that in a large nu schools, perhaps indeed in the majority, German on a somewhat precarious and uncertain footir almost all cases the number of pupils studying the l is small, and too often the time devoted to it is inac Here, as in French, oral methods are making headway. It is, however, but too clear that the pr essential to their successful application have not y thoroughly assimilated. Oral drill is not sys enough, or else it passes to the opposite extreme a comes stereotyped within the limits of a few stock tions and answers. And there should be more rep Pronunciation touches a fairly high level in some s But it is not yet grappled with on scientific princip it ought to be at the very outset. The new sounds c all be learned by imitation alone, and teachers woul that in German, as in all other languages, even the elementary knowledge of phonetics could be turn excellent account. As is only natural where the ti unduly limited, the range of continuous reading over is seldom sufficiently wide.

MATHEMATICS.—There seems to be no doubt as t beneficial effect that is being produced upon mathem study by the infusion of modern methods into the tea One of the most immediate results has been a n increase in the popularity of the subject. Whereas

ommon a few years ago for girls in secondary and inter-ediate schools to omit mathematics entirely from their urriculum, such an irrational proceeding is now the excep-ion. Whether the full value of the new aspects of the ork has yet been adequately realised, is much less certain. ut at least it is a clear gain that the interest of the upils has been quickened, and that the essential unity of he different branches is becoming more and more generally pprehended. The ultimate educational advantage ought o be great. What has hitherto seemed meaningless to upils can now be made plain by practical demonstration herever the practical side of the teaching is properly orrelated with theory. It is in the neglect of such correla-ion that danger lurks.

As regards arithmetic, manipulation is usually accurate, although here and there the need exists for stricter insist-ence upon accuracy of computation. Principles are not always well understood, and in some quarters mechanical methods continue to be employed. On the whole, however, t may be said that greater attention is being paid to ecuring an intelligent appreciation of the processes involved s well as to insisting on a proper apprehension of those eneralisations, the true understanding of which makes sy the transition from arithmetic to algebra. Decimals e not used nearly so freely or so naturally as is desirable. appears that many pupils still prefer the most unwieldy lgar fraction to the simplest decimal. This is a very ious weakness.

In algebra the attempts to blend the new method with e old are frequently too crude. Some teachers begin the bject in the traditional manner, and do not make use generalised arithmetic until near the end of the course. a matter of fact, ordinary arithmetical notions should regularly employed from the beginning, and simple oblems of an interesting type should be prominent from e outset. Graphical studies are now pursued almost erywhere, and algebra has benefited materially by the ange. But in some schools the introduction of graphs postponed until too late a period in the pupil's career. ey should make their appearance as early as possible. e first practice should be upon curves the direction of ich changes continuously. Abrupt change requires an ount of discussion which it does not always receive, ile curves consisting really of a number of isolated points e seldom adequately explained.

In geometry the sequence chosen is not always well apted to give due prominence to the two aspects of the dy. The teacher should aim at following a logical rse in which each inductive proof shall be followed as n as possible by the deductive. By some of the best chers this has been done with remarkable success, and such a way as to show how needless is the fear that metry treated practically will lose its value as a means mental discipline. There might be ground for that rehension if practical and experimental work were hed to an extreme that left no room for logical deduc-, and if pupils were allowed to leave school unable to ry out geometrical reasoning except with the aid of rule compasses. But, up to the lower grade stage at least, re is no such risk involved in the use of the newer hods.

CIENCE.—Experimental science continues to be developed sound and well-considered lines. In both secondary and rmediate schools the course at present being followed braces, as a rule: (1) measurements of length, area, and ume; (2) elements of (*a*) hydrostatics, (*b*) heat, and (*c*) ht; (3) elementary chemistry. Where more than three rs a week are given to the subject, or where the curri-culum includes a fourth year of study, magnetism and electricity are usually taken up. Too often, however, these later studies appear to be entered upon with insufficient mathematical knowledge and without the necessary pre-liminary practical acquaintance with dynamics upon which they are so largely dependent. The result of this is never satisfactory.

A close correlation between mathematics and experi-mental science is being generally maintained. Some parts of the earlier work in science, *e.g.*, measurements of length and area, are now commonly dealt with in the mathe-matical class-room, so that the necessity for their con-tinuance in the laboratory is steadily diminishing. Nor is this the only direction in which the time given to science is really time spent on mathematics. The calculations which are necessary in connection with the various experi-ments furnish admirable practice in securing expertness and accuracy in arithmetic. The opportunity afforded for acquiring familiarity with decimals is a specially con-spicuous advantage.

In a few of the schools an attempt is made to cover rather more ground than the number of hours allotted to the subject would warrant. Fuller experience may be ex-pected to remedy this. Inadequate discussion of experi-mental exercises is another defect which has to be watched carefully.

THE TYPE IN SCHOOL-BOOKS.[1]

By R. T. WILLIAMSON, M.D. Lond., F.R.C.P. Lond.

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THE vision of many school children and college students is defective owing to myopia. In a private boys' school which I recently examined 23 per cent. of the scholars were myopic; and of fifty-five students who have just entered the department of education of the Victoria Uni-versity (for training for school teachers) fifteen are myopic —*i.e.*, 27 per cent.

Though there is a difference of opinion as to the pro-duction of myopia, there can be no doubt that prolonged eye strain during school life often causes or increases this defect. Many ophthalmic surgeons regard this eye strain as the most important of the causes of myopia. The whole subject has been carefully studied by many observers, and by no one more thoroughly than by the late Prof. Cohn, of Breslau. Space does not permit any account of his con-clusions,[2] but they furnish the strongest evidence of the injurious influence of severe eye strain during school life.

One important factor in the causation of this injurious eye strain is the bad type of many school-books, and it is very desirable that more attention should be devoted to this subject by those who have the supervision of the education of school children and college students. A small, bad type in school-books and college text-books not only causes eye strain and tends to produce myopia, but also, owing to the eye strain caused by reading such a type, there is often difficulty in concentrating the attention on the subject of study and diminished interest in it. For these and other reasons it is most important that the type of

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[1] Reprinted, by special permission, from *The Lancet*.

[2] I have stated the most important of these conclusions in a pamphlet on School Hygiene, published by Sherratt and Hughes, Manchester, 1904, p. 11.

school-books and college text-books should be tested, as is done in some Continental towns, and when it is found to be defective an endeavour should be made to obtain books printed in a satisfactory type. Of course, it would be absurd to choose books for study simply on the merits of the type; but when the type of any desirable book is found to be defective, if the authorities of the school in which it is used strongly urged the publishers to print the work in a satisfactory type, there is little doubt that this would be done, especially if the school authorities clearly intimated that the use of the work would be discontinued if the type were not improved.

There are many points of importance with respect to the printing of books in order that those who read them may not suffer from eye strain. These are given in the various works on school hygiene.[1] Prof. Cohn has discussed the whole matter most thoroughly in his work on the subject.[2] In this short article I wish to refer only to the size of the printed letters and the distance of the lines apart. There is no absolute rule on these points, but the minimum size of type which Cohn would allow may be taken as a fair estimate for practical purposes, and I think that probably most of those who have studied the subject will allow that no type should be employed for school-books and text-books which is smaller than Cohn's minimum.

The following are Cohn's conclusions on the size of type, the letter "n" being used for measurement: the height of the smallest "n" should not be less than 1·5 mms.; the least distance between two lines of type 2·5 mms.; the thickness of the stroke of the letter not less than 0·3 mm.; the greatest length of the line 100 mms. (about four inches); and the greatest number of letters in one line sixty. Cohn has devised a simple test of the size of type—a test which indicates whether the type is smaller than the minimum just mentioned. A small square hole is cut in a piece of thin cardboard (or in a visiting card), the hole being exactly one square centimetre.[3] The card with the centimetre square hole is placed on the printed page of the book, the lower edge of the square being immediately above one line of print. A satisfactory type should be so large that only two lines of print can be seen in the centimetre square: if more than two are seen the type is too small, and should be condemned.

Size of hole in test card:

(Square centimetre.)

The distance of the lines apart is very important, since a small type with the lines well separated is more easily read than a larger type with the lines close together.

Taking Cohn's square-centimetre test as a trustworthy standard, I have examined the type of 250 school-books and college text-books with the following results. The type was equal to, or larger than, Cohn's minimum (*i.e.*, not more than two lines in the centimetre square) in 109 books. In thirty other books there were in some paragraphs two lines, in other paragraphs three lines, in the centimetre square. There remained 111 out of the 250 books (44 per cent.) in which the type was decidedly too small—*i.e.*, three lines or more in the centimetre square. The results were as follows:—

Books.		Number of lines see centimetre s
139	109	2 or 1.
	30	2 in some paragraphs,
111	93	3.
	3	2 in some paragraphs,
	9	3 in some paragraphs,
	-	4.
	1	5.

Defective type, as regards size and distance of lines apart, i 250 books = 44 per cent.

The type of school-books has certainly impr much in the last thirty years. In 78 per cent. o of old school-books, printed between 1870 and type was defective—*i.e.*, three lines or more wer the centimetre square. In the 250 modern sch which I examined the defective type was met w frequently in books on mathematics (arithmetic, trigonometry, &c.). In 67 per cent. of the books o matics the type was defective. The small elementary works on science had also very freq defective type. Books on history, geography, tra books of general information were usually well and so were the elementary reading-books for th classes. Many of the books of this class were specimens of the printer's art. But in cheap edi poetical works and of standard English literature was often very small and defective. Particularly was the type of a large number of the very cheap of well-known novels (in school libraries) which eagerly read by the schoolboys and youths. In books of this kind are specially liable to damage if printed in very small type. One of the worst books examined was a very cheap edition of "R Crusoe" for schoolboys. I have tested the type books in the library in the reading-room of a larg the books being chiefly cheap editions of standard authors. The type was particularly bad. In twe out of the forty it was defective. The worst was a of Shakespeare, in which there were six lines of the square centimetre; and many poetical works l lines of type to the centimetre square.

Often the type of the Bibles used by school ch exceedingly small; frequently there are six or seven the square centimetre. Of course, Bibles are printe British and Foreign Bible Society in all sizes of t cheap Bibles can be obtained for schoolboys in sati types, whilst other school-books are usually printed one type. There are good reasons, no doubt, for th ing of some Bibles in very small type, but the Bible would do well to issue "school Bibles" printed in not smaller than that of Cohn's minimum (two line centimetre square). Atlases are often printed in small type, and the maps crowded with names. Of height of the letters is only 0·5 of a millimetre, an five or six names can be seen in the square centim addition to the indications of rivers, mountains, boun &c. This, of course, causes great strain to the eyes pupils. It is most desirable that a larger type sho used in the atlases for school children, and that names and details should be given. In most of the printed by the Royal Geographical Society (in the *graphical Journal*) the type is much larger and c though many of the less important names are prin a type a little smaller than Cohn's minimum. These lent maps might be well adopted as a standard minimum size of printing for school atlases.

There are many other points of importance in the ing of books which space does not permit to be con

[1] Also in the pamphlet which I have already mentioned.

[2] Cohn and Rübencamp, "Wie sollen Bücher und Zeitungen gebruckt werden?" Braunschweig, 1903.

[3] Cards with a centimetre square for measuring the size of type can be obtained by post from Herr F. Tiessen, Inh. E. Schultz, Schmiedebrücke 30-32, *Breslau, I., Germany.*

this article. But the figures which I have given show early that, apart from other defects, the size of the type nd the distance between the lines in a large number of hool-books are too small if the minimum of the best uthors be accepted. Apart from actual measurements, in any of the school-books examined it was evident from mple inspection of a printed page that the type was too mall to be read for any length of time without great eye train.

Since so much attention is now being directed to school ygiene, and since we have in Cohn's square-centimetre est such an easy method of detecting the two most nportant defects of type (size of letters and distance of nes), it is to be hoped that the printing of school-books ill receive more consideration in the future. If those who ave the supervision of the education of school children nd students demanded that the type of school-books should satisfactory, the risks of eye strain and myopia would diminished, and the study of many books would be ade easier.

ECENT RESEARCHES IN THE UPPER AIR.

THE methods for sounding the atmosphere employed at e present day have been in our possession but a few ars. The kite, carrying self-registering apparatus, was troduced by the Americans about fifteen years ago; the unding balloon dates but twelve years back. The use of lloons, furnished with registering apparatus, was pro-sed by Lemonnier, a French physicist, at the end of the ghteenth century; but they were actually employed for e first time by the Brothers Renard, and especially by M. Hermite and Besançon, whose first observations go ck to 1893. Observations of great interest had already en made on mountains. To these are now added servations made in air altogether free.

M. Teisserenc de Bort has carefully verified that the essure in free air diminishes in accordance with the baro-etric formula. For that purpose he determined the ights of a large number of balloons by observing them th two theodolites. On the average the heights thus served agree with those deduced from the barometers rried by the balloons to within 2 or 3 millimetres of rometric pressure for a height of 4,000 metres. The aps of the isobars at 4,000 metres show that most of the eas of high and of low pressure observed near the ground come effaced as we rise in the air, and give place to a essure distribution of a much simpler kind, viz. a maxi-um of pressure all round the earth in the tropical regions, d low pressures at the poles. The average direction of rus clouds is in harmony with these conditions.

As regards the distribution of temperature, the follow-g conclusions have been established:—

(1) Even at a height of several thousand metres above ground there is, contrary to what had been thought, a y sensible variation of temperature from winter to mmer, the divergence of temperature between the coldest d the hottest month being 9° C. at 10 kilometres height.

(2) After it had been noticed that the rate of fall of mperature increases with the height above the ground, it s naturally supposed that temperatures at great heights the air were extremely low. But sounding balloons dis-ched from the Trappes Observatory have proved that, er a certain height, varying from 9 to 14 kilometres, the fall of temperature ceases altogether—another fact that was wholly unexpected.

(3) The zone where the temperature ceases to fall, called the "isothermal zone," is situated nearer the ground (8 to 9 kilometres in certain places) with low pressures, and further from the ground (about 12 or 13 kilometres) above high-pressure areas.

(4) As a general rule, it is colder in the upper part of an anticyclone than it is at a corresponding height above low pressures, but the contrary holds at medium heights of about 5 kilometres. The absolutely lowest temperatures are observed near high pressures. A temperature of −73° has been observed several times at Trappes, and recently as low as −80° in Austria.

(5) Balloon flights made daily for a week or more at a time, in different years and at different seasons, have shown that at intervals of a few days the atmosphere experienced variations of temperature which are much more important high up than on the ground. At a height of 11 kilometres variations of 15° to 20° are often observed at a time when variations of only 2° to 3° are found near the ground.

It is believed that the arrest of the decrease of temperature is connected with the cessation at a certain height of movements of the air having a vertical component, the air then having movements which follow the isobaric surfaces. There is no longer any temperature variation due to expansion or compression of the air.

It has been demonstrated, alike by calculation of the isobars and by the flight of balloons, that most of the depressions which appear near the ground as complete atmospheric vortices suffer deformation as the height increases, and in their northern part lose themselves in the great polar vortex; so that, at a certain height (4 to 7 kilometres), east and north-east winds are no longer found to the north of a depression, and the isobars at this height form a handle attached to the low-pressure areas of northern latitudes. On the front of a depression its characters remain distinct to the top; a sheaf of ascending air reaches the height of cirrus cloud, and then spreads over the barometric maxima to east and south-east.

Summary of an address delivered before the Royal Society of Edinburgh by M. L. Teisserenc de Bort.

HISTORY AND CURRENT EVENTS.

IN 1685, Louis XIV. of France revoked the Edict of Nantes. The policy which culminated in that revocation drove out of France thousands of Huguenots, who took refuge partly in England, partly in Prussia and other Protestant lands; and it has become a commonplace of history to remark on the consequent weakening of France and enrichment of those countries that received the fugitives. More than two hundred years have passed, and now the circle seems to have been completed. Even the *ancien régime* had its quarrel with the Society of Jesus, which, at the bidding of Bourbon monarchs, was suppressed in 1773, being restored only with so many other institutions in 1814. Now France will have no "religious orders" within its territory, and has even completed its revolution by breaking the Concordat and disestablishing the Catholic Church; and the events of the seventeenth century are repeated. The French fugitives have taken refuge again in England and in Prussia. Whether the parallel will be carried further is for the future to show.

THE British Empire, like all largely extended dominions, is a federation. In other words, central government of such extensive territories being, for obvious reasons of distance and conflicting interests, practically impossible,

much is left to local government; and these local governments form a kind of hierarchy. There is local government, and still more local government. There is, *e.g.*, a British Empire, which contains an Australian Commonwealth, which in turn contains States, New South Wales, &c.; and there is also a Dominion of Canada, which in turn contains Provinces, Quebec, &c. This division of the powers of government, though not deliberately set up, has been allowed to exist for the express purpose of giving free play to the conflict of interests. British wisdom has found that it is better to let disaffection talk, even in talking machines (Parliaments), than to attempt to stifle it until it expresses itself violently in rebellion. Hence what appears as revolution in other countries, such as Russia or Austria-Hungary, or even has appeared in our own ancient history, as in North America in the eighteenth century, now scarcely excites remark.

THE provinces of Canada are discontented with the Constitution of the Dominion, and the more western thereof are expressing their dissatisfaction with certain financial arrangements by demanding a change in the Constitution. The Australian Commonwealth is dissatisfied that the British Empire has made a convention with France about the New Hebrides without consulting it. It has lately passed a Bill giving preference to British goods, but only if they are imported in British ships manned exclusively by white men, to the exclusion, that is, of their fellow-subjects who are Lascars, &c.; and the Governor-General is not certain that the British Empire will agree to this condition. Western Australia is dissatisfied with the results of her union with the other colonies in the Australian Commonwealth, and is proceeding to express her desire to withdraw therefrom. Yet we do not think the British Empire is threatened with partition; much less do we anticipate a war between Western and Eastern Australia, such as rent the United States forty years ago. Why?

THE agitation of Bengali Hindus against the partition of Bengal, and their apparent partial success, has at last roused the Mohammedans of North India to speak their mind to the Viceroy. These latter are a long-suffering community who, though not neglectful entirely of education, have left the Bengalis to obtain the advantages offered by the University of Calcutta and similar institutions. The consequence has been that the Bengalis have developed their native gift of talking, often without the balance of mind derived from long practice in administration and in the higher ranks of government, and have been heard out of proportion to their importance. But now the more silent ones have spoken; and they have been assured by the Viceroy that in any development of consultative councils they shall be represented as a community. "As a community"—that is, the British will make the beginnings of what may prove, in the dim and distant future, to be a Parliament for India where their mediæval kings began, with an assembly of estates.

A Year's Work with Mother Nature. By Alyce L. Sandford. 203 pp. (Pitman.) 3*s.* 6*d.*—With this "easy series of co-related nature-studies for little children, based on the seasons," a teacher should find no difficulty in interesting the most "difficult" infants. In the lesson on "The Life of the Bean," for example, we find a page of sketches, teaching notes, and a song (words and music by the author); and, finally, the bean is pressed into service for no fewer than fifteen infantile activities, from designing to *arithmetic.*

ITEMS OF INTEREST.

GENERAL.

THE new buildings of the King Edward VII. C School, presented by Sir W. J. Lancaster, a form of the school, were opened on November 5th by th His Majesty used the occasion to express his belie value of education. "It is only by a thorough e that the younger generation can hope to prove su in later life," he said in his reply to an address p by the Mayor. Replying to an address from the g of the school, the King remarked: "You, as gove the school, will, I feel sure, exercise the most s care in the direction of the studies of your pupils, th may be able to face the stress of life with an int equipment such as will enable them to hold their the world and bear their part in its work and duti efficiency and to the benefit of others; nor will, confident, the higher teaching of morality, truth, an respect be neglected."

MR. BIRRELL distributed at Leeds on Novemb scholarship certificates granted by the West Riding Council to the successful students. During the cou an address, he said it is necessary to bear in mi difference between one kind of education and anothe it would tax more powerful intellects than his to mine where elementary education ends and sec education begins. The education of this country i process, and we cannot divide it. Education begi moment we are born and ends only with the gra does not, therefore, do to exaggerate the scholasti of it; still less to strike any real deep-rooted disti between one kind of education and another. Any i cation of jealousy and rivalry between co-partners great and glorious undertaking is to be regretted. less, again, will it do to accept the vulgar notio elementary education is something for the childr artisans and agricultural labourers, secondary edu for the children of the professional and middle classe university education the luxury of the rich. Clas tinction of any sort must not enter within the sacred of education. The difference between elementar secondary education is not the difference betwee class and another, but simply the distinction betwe different times that can be allotted to education ar different aptitudes of pupils. It is a tendency, he tinued, of all teachers and of Presidents of the Boa Education to exaggerate too much the necessity of longed study at school and college; but the educa system of the country is lamentably and dangerousl fective if it does not provide for those who can d more time to their education and for those in elementary schools who show aptitude for an incr amount of learning.

THE tenth annual conference of the Parents' Nati Educational Union was held at Brighton on November and 3rd. Representatives of branches attended f various parts of the country. During the course of meeting several important papers were read, among t being "Some Thoughts on the Early Teaching Children," by Miss Clementina Black, who said that real aim, intellectually, in teaching children is to m them keen and their interests wide and alert to interests of the world. Miss E. A. Parish contribut paper on "The Teaching of History to Young C ren." A paper on "The Place of Classics in Mo Education" was read by Dr. W. H. D. Rouse, who

ishing Latin and Greek the mental effects of those languages and the stimulus of their ll be lost. But if the classics are to be re-ime-table will require to be remodelled. Oral uld also be employed. Mr. Philpotts, late of Bedford Grammar School, in opening the iid that in the classics it is the literature the s to get at, and he suggested that all grammar form a barrier to progress in this direction bolished. M. Roger Goeji-Hampson read a The Difference of Methods of Teaching in England," the Rev. W. C. Compton, head-ver College, on "Knowledge and Character," ighton on "Time and how to use it."

conference on education is being arranged in ith the League of the Empire, and will be ay 24th to June 1st, 1907. Among the sub-d for discussion may be noticed: the pro-the supply and the training of elementary-rs, and the conditions of their work in the dom and other countries of the Empire; the s in connection with secondary-school teachers; ility of temporary interchange of teachers and tween the home country and other parts of the relations between secondary and primary e various countries of the Empire; the means g a system of mutual recognition of equivalent standards of attainment in different countries re; and the methods of teaching the subjects l curriculum. The proposed programme is its scope, and should be productive of good particulars concerning the conference may be n the honorary secretary to the League, Mrs. l, Caxton Hall, Westminster, S.W.

al general meeting of the Association of Technical Institutes was held at the end of ie report of the council for 1905–6, directing he growth of the association, the formation of anches, and the hastening of alterations in instruction and examinations, was approved. g resolutions were accepted by the meeting on ndation of the council: "That in view of the dequate provision made in the present scholar-of local educational authorities for the needs technological, and trade students, the local the association be instructed to consider what of local scholarship schemes are necessary to ds of such students, and to press such amend-the local education authority with a view of ie defects indicated"; "That the attention of ical branch of the Board of Education be drawn bility of recruiting the staff of inspectors only with experience in technological teaching." Mundella, head of the physical and electrical department, Northern Polytechnic, Holloway, resident for 1906–7.

il of the Teachers' Guild has sent a memorial lent of the Board of Education, which states ncil is encouraged to hope that he will be ord consideration to its views on the subject ter of teachers. That no definite pronounce-subject from Mr. Birrell can be looked for ise of the Education Bill abolishing the present become law is recognised. The council is , should the present register be abolished, a uld be speedily established, which, to use Mr. Birrell's own words, "must be satisfactory to the teaching profession as a whole," and must, therefore, not classify teachers according to the grade of the school in which they have been teaching. The register should also have as its leading characteristics the fullest guarantees of professional preparation and the requirement of an academic standard as high as possible. Such a register, the memorial holds, would be best kept by a statutory educational council, on the lines laid down by the Royal Commission on Secondary Education. The establishment of an educational council seems to the council to be likely to afford the best means for the creation of a real profession of teaching.

THE annual meeting of mathematical masters in Swiss secondary schools was held this year at Bâle under the presidency of M. Fehr, of Geneva. The first subject of discussion was the division of the angle into decimal parts and the use of four-figure logarithms. On the motion of Dr. Otti, of Aarau, the following motion was adopted:—"In no branch of school mathematics are logarithm tables with more than five figures necessary, and in many cases four figures are sufficient." The centesimal division of the quadrant was recommended as the most advantageous; but in the face of practical difficulties it was considered advisable to use degrees and decimals of a degree. M. Kollross, of La Chaux de Fonds, discussed the subject of approximations. On his motion the following resolutions were adopted: "Every definition and every piece of theory should be preceded by concrete illustrations, so that the pupil may gain a general idea of the subject before he is introduced to a precise definition and a logical demonstration." "It is useful to consider the limits between which the result of a calculation lies when the data lie between known limits. For this purpose a comparison of results found by direct measurement with those given by calculation will often prove of great value."

WE have received from M. J. Toni-Mathieu, the director of the International Exchange of Children and Young People for the Study of Foreign Languages, a copy of the directory of the association for 1906. The movement was started in Paris in 1904, and has already met with much success. The idea has been more favourably received in Germany than in England; but the director receives from time to time from English headmasters and others assurances of the real value of the work of the association founded by him. Full particulars may be obtained from M. J. Toni-Mathieu, 36, Boulevard de Magenta, Paris.

WE are asked to state that a limited number of bound volumes of *Skandinavisk Månadsrevy för Undervisning i de tre Hufvudspråken* have been prepared, particulars concerning the contents and price of which can be obtained on application to the English Editor (universitetslektor Mr. C. S. Fearenside, Lund, Sweden), and that inquiries relating to the successor of that periodical should be addressed to the editor of *Moderna Språk*, Kristinelundsgatan 4, Göteborg. Owing to differences of opinion on the editorial board, our trilingual contemporary for the study of modern languages has been discontinued after about a year's existence, and its place has been taken by a new review which definitely restricts itself to the needs of the school teacher of modern languages. The new review, which is edited by Dr. Emil Rodhe, with the assistance of various foreign lectors in Sweden, resembles its predecessor in being trilingual (English, French, and German), but has at least one great advantage over it, and that is its possession of a short and self-explanatory

title, *Moderna Språk*. The first number, which has just appeared, contains, besides translations from Swedish into English, French, and German, an interesting article on "Dickensian Archaisms," by Mr. F. Cane, and the first of a series of interpretative papers, by M. Camille Polack, on some of the extracts included in his "Pages Choisies des Grands Écrivains du XIXe Siècle."

COMMANDER R. E. PEARY, though he did not succeed in reaching the North Pole, has beaten his own previous record—84° 17′ N. in 1902—and gained the most northerly point yet reached—lat. 87° 6′ N. After passing out of Ungava Bay in August, 1905, the *Roosevelt*, Peary's vessel, proceeded to the extreme north Greenland settlement. The vessel steamed and drifted through the ice to a latitude of 82·27°, where the expedition established its winter quarters. On February 7th Commander Peary started with some Eskimos and three teams of dogs for the Pole. Five other parties similarly equipped put out as reliefs, keeping fifty miles apart. Commander Peary was absent 117 days, and reached 87° 6′ N., 201 miles from the Pole, before he was compelled to start on his return. The food supply almost gave out. On the return journey the party encountered a most severe snowstorm, while the temperature fell to 75° below zero. It will be remembered that the Duke of Abruzzi's expedition reached lat. 86° 33′ 49″ in long. 64° 30′ E., in 1900.

MR. C. E. HUDSON, of Dover College, has been appointed headmaster of Keswick Dual School, in succession to the Rev. Cecil Grant. The success of Keswick School in developing a co-educational system was described in THE SCHOOL WORLD for November, 1901.

THE Civil Service Commissioners announce examination for 100 clerkships as abstractors on January 29th, 1907, and for 210 temporary boy clerkships on January 2nd, 1907. Particulars of these appointments and the subjects of examination will be found on pp. 227 (June) and 308 (August) of our present volume. The last days for application are January 10th and December 6th respectively. The age allowances now apply to examinations for abstractorships. In future, an ex-boy clerk can compete for an abstractorship, not merely until he is twenty-one, but until he is twenty-one + his years of service. Thus, if he obtains a situation after reaching the age limit of twenty, he might try to re-enter the service until he was twenty-five, instead of having to abandon the attempt at twenty-one.

THE C.S. Commissioners also announce that an examination for thirty Assistants of Customs will be held in February, 1907. The subjects and salaries will be found on p. 32 (January) of our present volume. The age limits are eighteen and twenty-one. Forms for applications can be obtained, with particulars, from the Secretary, Civil Service Commission, Burlington Gardens, W.

THE price of "The Simpler Poems of William Wordsworth," selected by Mr. Edward Hutton, and published by Messrs. J. M. Dent and Co., is *threepence net*, and not 3*s*. net, as stated on p. 436 of our last issue.

SCOTTISH.

PROF. PHILLIMORE, who has vacated the chair of Greek for the chair of humanity in Glasgow University, delivered an address to the students on taking up his new duties. He paid a beautiful tribute to his predecessor, Prof. G. G. Ramsay, whose long reign of forty-three years saw immense changes and developments in the University. In all these Prof. Ramsay was either a formative or a regulative influence, and to him more than to any c man is due the tradition of good order and bu organisation that distinguishes the Arts Facult strong good sense, the impatience of anything lik pretension and sentimental affectation, the practic and well-matched talents which characterised fittingly and gracefully on one whose duty it was, to impart acquaintance with Latin literature, bu pound the temper and quality of the Roman people.

PROF. PHILLIMORE, in the course of his addr occasion to justify the study of Latin and Greek n the ground that history, an adequate conception o is needed as a corrective to the blind self-concei fast taking possession of the mind of Western He claimed that we cannot know anything of th of Europe for an epoch of some 3,000 years w knowledge of Greek and Latin. The professor content with merely defending his own positi carried the war into the camp of his utilitarian and some of his shrewdest sallies were directed ag seeming "commercialism" of Dr. Carnegie's v university education. "To know of Herodes, Atti Trimalchio would give no bonds in the Steel Tr yet Trimalchio and the illiterate millionaire who books he could not read had to thank their satir what immortality they could boast of." "Anybod be less dazzled and hypnotised by the Golden Ca had studied the beast in history, and satisfied hims the features of this, like other idols, did not alte in a couple of millenniums." To those who reproac universities for studying "dead languages" he effective retort. "Every language was dead to th could not read it. Latin was dead to Dr. Carnegie, Dr. Carnegie was dead to Latin." "Unless th learning a language commercially—a perfectly lawfu but not one which a university proposed to itsel matter whether it be dead or alive, a spoken lang not. The time would never come when they coul to neglect the study of the rock bottom of classi which half our language, our literature, and ins were founded." These are only a few tit-bits singularly outspoken and unconventional address. prove Prof. Phillimore to be a "bonnie fechter" champion worthy to contend with Prof. Armstrong in vigour and directness of attack.

THE Outlook Tower, Edinburgh, under the dire Prof. Geddes, continues to extend its sphere of op During the past session a thorough overhaul h made of the exhibitions and apparatus. Descriptiv attached to the various objects of interest should great value to visitors who have not time to per official guide. Prof. Geddes himself devoted the w August and September of this year to the work arranging the various collections. The enthusiasm, ledge, and devotion which he brings to all the mo connected with the Outlook Tower promise to mak unrivalled centre of light and leading in the Scottish polis. The course of lectures for session 1906–7 usual, quite unique in its range of subjects. Dr. Hall, president, Clark University, U.S.A., open series by an address on "The Outlook in Education. report could do anything like justice to the kno insight, and sympathy he displayed in regard to problems of school life, and still less to the charmir of humour which ran in a rich vein throughout the address. Psychologists, and especially American logists, too often give ground for the charge tha

e little regard to the facts and conditions of ool life. Dr. Stanley Hall is as eminently sane l as the most critical could wish. Even in re- oral punishment he showed that he knew all s of child training. "The great thing to he said, "is that discipline, even in a severe n occasion, necessary. They must insist on ience and strict discipline in school. Punish- ven corporal punishment, should follow quick ce, and should not necessarily be without is will seem rank educational heresy to the ts who believe in the natural goodness of all but teachers, and all who are in close contact , will heartily welcome Dr. Hall's contribu- mmon-sense and common-fact point of view.

of the Committee of Council on Education or the year 1905 has now been completed and ilky volume of more than 1,000 pages. Refer- ady been made in these columns to the separate eport as they appeared from time to time, but left a mine of interesting matter which should nanent value to the general reader, as well as tional expert. Mr. Scougal's second annual enior chief inspector, provides an admirable the direction and aims of all types of educa- videly-scattered district. Steady though slow continues to be noticeable all over the average percentage for the country having 5·98 in 1904 to 86·6 in 1905. The period before and immediately after the summer esponsible for a serious decrease in the per- ttendance. Parental carelessness and selfish- as the migratory habits of certain classes of , are responsible for the greater part of this it is pointed out that greater activity on he attendance authorities at this time would sen the number of absentees.

o the ordinary school work, it is stated that nce of distinct improvement in the teaching nd arithmetic, a better correlation of allied struction, and a truer conception of the place of the various subjects in the scheme of r. Jamieson, inspector of the eastern division, tinent remarks on the nature of the training s. "In the city school there may be greater writing and greater deftness in some of the ical parts of the work, but there is certainly intelligence, and there is certainly less The opinion has steadily grown to con- n large schools where there is a teacher for the children are over-taught. Everything them and done for them, and they are not a single moment while the time-table runs." has touched the weak spot in large schools, rdly be said to suggest the remedy. Perhaps ar he may have more to say upon what is nost difficult problem.

ntion was recently directed to the results of ns upon the mental and physical capacity of ren through the report of the Royal Com- ysical Training. The conclusions then arrived cepted as final, as they rested to some extent and insufficient data. The committee of the arity Organisation Society resolved some time a more thorough and detailed investigation into the relations between "slum" conditions and physical and mental deterioration. For this purpose they selected for examination a public elementary school in the poorest district of the city, attended by nearly 1,400 children. Every child in the school was weighed, measured, and thoroughly examined by medical experts. The home conditions of each child were investigated by a band of volunteer visitors; the parents' employers of labour were in every case seen or written to, and every church and religious or charitable association that could throw light on the social conditions of the people was appealed to. The investigation was therefore as searching and specific as could well be imagined, and the report, which has just been issued, is justly entitled to be regarded as trustworthy and conclusive so far as its facts go. Mr. Arthur Sherwell, under whose direction the whole investigation has been made, states in his preface to the report that "while the economic factor is not absent from the poverty problem in the city, moral causes are present in exceptional measure, and much of the suffering and degradation of the people is plainly and unmistakably due to an excessive indulgence in drink." The report proves in an absolutely irrefutable manner the close connection between physical deterioration and bad feeding and housing. "At five years of age the average boy in this Edinburgh school is 2·16 lbs., and the average girl 2·8 lbs., less than the standard average of the Anthropometric Committee. At thirteen years of age the boy weighs 10·9 lbs., and the girl 12·4 lbs., less than the standard average." Height follows much the same rule as weight, and in almost every case it is noted that it is the girl that suffers most from malnutrition. The results here placed before us are humiliating and discreditable to us, a nation that claims to be in the van of civilisation.

PROF. LODGE, in his opening lecture to the history class in Edinburgh University, commented on the modifications in the system of teaching in the Faculty of Arts proposed by the University authorities. Hitherto the teaching of the Scottish universities had been what was called professorial teaching, while that of the older English universities was tutorial teaching. He had had a good deal of experience of both systems, and each had certain merits and real defects. The traditional corporate spirit of the Scottish class made the professorial method more efficient and exhilarating in a Scottish university than in Oxford or Cambridge. Its chief defect was that under it the teacher had to deal with a class, and not with the individuals of it. The individual could best be attended to under the tutorial system; but this, too, if carried to extremes, was too extensive, too laborious, and took away too much the initiative of the student. The great advantage of the professorial method was that it encouraged the independence of the student. If to its manifest advantages they could graft the best elements in the tutorial system, the efficiency of the Scottish universities would be enormously increased.

GLASGOW has followed St. Andrews in celebrating the quatercentenary of the birth of George Buchanan, the distinguished humanist and reformer. In St. Andrews the proposal originated, and it was in large measure carried through by the University authorities. In Glasgow the celebrations, while loyally supported by the University, were the outcome of the enthusiasm of private citizens and of learned societies like the Archæological and Historical Society. The address of Principal Lindsay on the life and work of Buchanan was the outstanding feature in the celebrations, and by general consent it was acknowledged as one of the noblest and most worthy that the present

on the same page, *frissonants* on p. 77, *vouz* and *sa* for *la* on p. 80, are examples of printers' slips. It should be added that some questions on the text, and sentences and passages for retranslation, are also given.

Alfred de Musset, Poésies Choisies. Edited by C. E. Delbos. xxiii. + 135 pp. (Oxford: Clarendon Press.) 2s. net.—This is a volume in the Oxford Higher French Series, edited by Mr. L. Delbos. To have a selection of Musset's verse will please many, especially as the editor has supplied a good introduction and brief, helpful notes. Only the remarks on prosody are not always satisfactory; thus there is nothing more noticeable in the rime *nuits: amis* (p. 110) than in our rime *true: new*, and the note on ll. 161–4 of *La Nuit de Mai* is quite pointless; in ll. 180–3, 184–7, and in many other cases, there are "four consecutive lines that do not rime." The notes are generally well expressed; as a curious example of how not to word a note, the following deserves to be quoted: "*affreux Lido*: probably so spoken of as having been the place where that sad event occurred which separated him from George Sand: but again might accurately describe its appearance except during the summer season, when it might present a lonely and gloomy aspect, although one of the principal islands, Malamocco, was formerly—but is not now—a charming spot."

(1) *A. Galland, Sindbad le Marin*; (2) *E. About, Les Jumeaux de l'Hôtel Corneille*; (3) *P. Mérimée, Le Coup de Pistolet et Tamango.* All edited by W. G. Hartog. 70 pp. each. (Rivingtons.) 1s. each.—These are well-known texts, and have, we believe, all been edited for English pupils before. The characteristics of these volumes are similar to those of others in Rivingtons' series of New Intermediate French Texts: text, notes in French, *questionnaire*, a few grammatical exercises, and passages for re-translation. There are also the usual signs of hurried production: in (1) we have counted fifty-eight misprints on fifty pages. The illustrations to (1) and (2) are above the average; those to (3) are simply awful. We cannot conceive why anyone should edit such a horrible tale as *Tamango*.

Dent's First Exercises in French Grammar. By Miss F. M. S. Batchelor. 83 pp. (Dent.) 1s. net.—A companion volume to Berthon's "Première Grammaire Française" which consists of questions on the more usual parts of French grammar. To avoid translation, sentences are given in French with blanks to be filled up. The system does not seem to differ considerably from other elementary works of the same nature.

Les Pèlerins de la Tamise. By Christine Boyd. 120 pp. (Dent.) 1s. 6d. net.—A reading-book for second- and third-year students. The characters are the same as in "Dent's Second French Book"; the French family visits England, and we read their opinions and thoughts on London. The great difficulty of such accounts is to avoid being too priggish and goody-goody; this pitfall has not always been avoided. There are notes in French at the end of the book explaining the harder phrases, and there are also exercises for revision. So far as we have tested them, they appear correct and satisfactory.

Contes Choisis. Edited by W. Osborne Brigstocke and H. Cammartin. 48 pp. (Dent.) 6d. net.—This is another number of Dent's Short French Readers, containing *Zadig* and *Montesquieu et Chesterfield* of Voltaire and the *Rêve de Mangogul* of Diderot. The preface is more likely to be appreciated by teachers than by scholars. The text is accompanied by notes in French and by reform exercises.

O. Feuillet, Vie de Polichinelle. Edited by Gerothwohl. 48 pp. (Arnold.) 6d.—This st amuse young readers; it is almost too light for cl The text is well printed; the only slip we notic for *forte* (p. 24, l. 4). The notes are adequate protest against such renderings as "won't the de this bore shut up" and "he was bursting with rage." The vocabulary shows signs of hurried tion.

Anthology of French Poetry. Compiled by F. xv. + 285 pp. (Sonnenschein.) 1s. 6d. net.—This forms a volume of the Bijou Series, and the c desire was to make it fairly representative of Fren literature, at any rate of its lyrical element, from of Froissart to the present day. The introducti too brief, and so are the specimens of poetry; e apparently had to be "bijou." The number of au whose works Mr. Lawton has drawn is very gre of them we did not know even by name. Perso should have preferred to throw overboard Louis mann's painful perversion of Goethe's *König i* André Gill's horrid *Ballade du nez du pauvre* a poems, and to have given more space to some of masters. Some fine lyrics we have seen here for time, and we are duly grateful to Mr. Lawton.

Dans le Royaume des Fées. By Violet Pa 68 pp. (Marshall.) 9d.—This is a second series o plays for children, which will be welcome news to have watched the interest which the first series among their pupils. This time Miss Partington, good fairy godmother that she is, presents our b girls with *Cendrillon, La Belle et la Bête, La Bois Dormant*, and *Les Trois Ours.*

Classics.

The Andromache of Euripides. Edited, with Intro Notes, Vocabulary, and Appendix, by G. Norwood. 151 pp. (Murray.) 2s. 6d.—Our chief criticism book is, that the boy who can read a Greek pla not to have a special vocabulary, but ought to dictionary. We urge this the more strongly, bec looks like the precursor of a new series, and quite labour has been misspent already on books of th Such sections as those of the Introduction on Me quite out of place; so are the disquisitions on tragedy, and all the machinery of the stage. Bo use such books have to pay a dozen times over same thing. The notes are also too long; many c are good, but quite beyond the comprehension of who cannot use a dictionary. We need spend no time over this discussion; enough has been said to that the editor is not aiming at a special mark, but off both barrels at a covey with his eyes shut. It known that no birds are shot in that way.

The Iliad of Homer, Books III. and IV. Translat English prose by E. H. Blakeney. 56 pp. (Bell.) We have already reviewed an earlier part of Mr. Blak Homer; this is like to it. The style is archaic; the lation accurate enough in straightforward passages, difficulties flighty, and sometimes apt to mislead. Sc example, p. 55, ἠέριαι, where he follows Leaf in ad the less likely sense "early in the morning"; p. 61[1], νικήσαντι is rightly translated, and then explained note as having a future sense; p. 63[1], where τηλυγ translated alternatively "growing into womanhood impossible sense; p. 92[1], where πολέμοιο γεφύρας

plained in a fanciful way and translated "barriers of man." Mr. Blakeney omits a great many lines of the text which have offended one editor or another, and he is for ever referring to the Bible. There is a great deal of out-of-the-way information added, chiefly in the form of bare references to books which no reader is likely to have. The best notes are those which quote illustrations from English literature; but on the whole they show a conspicuous lack of judgment.

Euripides, Alcestis. Translated by Dr. H. Kynaston. With Introduction and Notes by Dr. Churton Collins. xxx.+44 pp. (Clarendon Press.) 1*s.* net.—We regret that we cannot say very much to recommend this book. The style of the translation is stiff and uninteresting, and its verse is monotonous; the lyrics are anything but lyrical. We infer from the contents of introduction and notes, as well as from the translator's preface, that the book is meant to be used as an English school reader, in order to show outsiders the beauty of Greek drama; but it will hardly serve that purpose: it is not good enough. A verse translation is one of the most difficult things in the world to make, and we wish that so excellent a scholar as Mr. Kynaston had been more successful.

The Medea of Euripides. Edited by H. Williamson. xxviii.+159 pp. With Vocabulary. (Blackie's Illustrated Greek Series.) 2*s.*—We do not at all approve of vocabularies in books of this sort; they are mischievous except in the hands of beginners, and a boy or girl who can read the *Medea* is more than a beginner. Moreover, the greater part of the book is addressed to a more mature mind than the beginner. For him a great part of the introduction and notes would be useless. And the quality is good as a whole; the book does not give the impression which so many school-books do give, of being written to order by a crammer. True, there are unnecessary notes (*e.g.*, 1, 2, 28, 479), but they are few; most of the notes are clear and good; they are really intelligent, especially when the editor touches on the psychology of the characters. He has also some interesting criticisms of Dr. Verrall, whom he is perhaps a little too apt to follow. We may add one or two suggestions or corrections. The κάλως of 278 is not the "sheet," but the rope used for reefing, as may be seen still in the Levantine boats; by means of a loop it was so arranged that a simple pull caught up a large corner of the upper part of the sail and made it smaller, and this was just let out to make full sail again. Our equivalent is to put on every stitch of canvas. Again, the suggested cause for the failure of this play to get the first prize (1021) is not likely, because many other first-rate plays are known to have failed. The Athenian mob was not infallible, and such things as intrigue were known.

The Greek War of Independence (1821–1827). Being a Greek Text for beginners, with Notes, Exercises, Vocabularies, and Maps. By C. D. Chambers. xii.+204 pp.; illustrations and maps. (Swan Sonnenschein.) 3*s.*—This book embodies a good idea well worked out. A subject of interest is chosen, one involving action, a heroic subject in fact, its scene laid in Greece; and it is described in simple ancient Greek, the chapters being graduated in difficulty. A minimum of grammatical information is given, and parts of it indicated for study with each chapter; the notes explain difficulties beyond the scope of a given stage, and add illustrative anecdotes or such historical facts as are necessary for the understanding of the text. The compiler has chosen his words with care, using most of those which Thucydides uses more than twenty times, and more than half of those which he uses ten times: the number words is about 1,250, the length of the book about 50 page Exercises for retranslation are added, in case the teach wants them. We regret that the vocabulary is printed very small type—a mischievous thing—but that is almo the only criticism we have to offer. A few words, think, might be changed (thus δήμῳ, 4^{16}, should be γέν since δῆμος is properly a political term); but we have rea the story with real satisfaction. The pictures represe Greek sites by photograph.

Longinus on the Sublime. Translated by A. O. Prickar With Introduction, Appendix, and Index. xxviii.+128 p (Oxford: Clarendon Press.) 3*s.* 6*d.* net.—This is a ver nice little book. The style of the translation is generall clear and simple; its expressions are, as a rule (althoug not always), natural and idiomatic. Allusions are explaine in the notes; and the introduction deals with the gener value of the work. In the appendix are collected extrac on literary criticism from several Greek authors. There no critical work ever written which is better worth readin than Longinus; and we hope everybody who professes enjoy any literature critically will study it in Greek or i English.

English.

Walter Pater. By A. C. Benson. 226 pp. (Macmillan 2*s.*—In this volume Mr. Benson has accomplished a reall fine and much-needed work. Pater is little known to man people, who have heard just enough about him to run o with utterly unjust and false estimates of his work an character, and as no biography of him has hitherto ex isted, he has suffered from criticism which will hence forth be wholly inexcusable. These pages at least do hi justice, and the portrait here presented by the hand of deft and sympathetic literary craftsman is one to endea him to thousands no less than to right him in the eye of popular misconception. In spite of the uneventfulnes of Pater's life and his own quiet, retiring habits, the boo is one of the best we have lately read, and it ought t win wide recognition as a fearless and almost flawles piece of literary portraiture, while it is also the firs attempt to write a book upon one who certainly deserve his place among English men of letters. The things tha could be quoted from these pages are numerous, and w must refrain; but we should like to draw attention t Mr. Benson's treatment of Pater's attitude towards Words worth, his relations with Jowett, his caricature by Mr Mallock in "The New Republic," and his contrasts and re semblances to the late Prof. Sidgwick as being especiall worthy of notice. The remarks upon Pater's achievement in English prose on p. 115, and on the usual type of com position which is the outcome of our English syste of education on p. 116, are also worth pondering, n less than the critical estimate of his style in the las chapter, which culminates in what Pater himself woul have been quite content with as the highest praise h could desire, namely, that "he realised his own concep tion of perfection."

Lamb's Tales from Shakespeare. By T. H. Flather xv.+160 pp. (Cambridge University Press.) 1*s.* 6*d.*—Thi is a second selection from the pages of one of Lamb' happiest literary efforts. Like the first selection, it i only deserving of praise, and it is likely to prove a usefu reading-book for juniors. Only a short introduction an glossary are given to this volume, but in an appendix some passages from the plays on which the selected Tale are founded are happily provided. As an introduction t Shakespeare study the book is capital.

In the Days of Chaucer. By E. E. Ohlson. 38 pp. (Blackie.) 4*d.*—This little work is described as a pastoral interlude in two scenes. No less than twenty characters are required. The measure is blank verse, and the verse is by no means bad of its kind. As a school play it would doubtless be found useful, especially as the directions given are sufficient to make it easy to act. It would certainly tend to introduce junior and middle forms to Chaucerian study.

Selected Poems of Matthew Arnold. By R. Wilson. xv.+111 pp. (Arnold.) 1*s.* 6*d.*—This selection is capitally done, and contains much of what is really best in Arnold's poetry. There is a good introduction, intended primarily for the teacher, and some excellent notes are added, adapted to the needs of pupils in the middle and upper forms of secondary schools.

The Age of Chaucer. By J. C. Stobart. vi.+136 pp. (Arnold.) 1*s.* 6*d.*—Although this book is the first volume of a series projected to deal with the successive epochs of English literary history, it is not, as the title might seem to imply, a detailed account of the period with which it deals, but merely a collection of poetical illustrations. As an anthology it may be commended for educational purposes, for it contains much interesting and unfamiliar matter, including some of the celebrated Paston letters; and an introductory chapter deals satisfactorily, if briefly, with Chaucer's literary predecessors and successors. Several poems of unknown authorship are given; also selections from Robert Manning, Sir John Maundeville, "Piers Plowman," and Sir Thomas Malory. Likely to be useful in the hands of a capable teacher.

Pearl: a Fourteenth Century Poem. Edited by G. G. Coulton. viii.+51 pp. (Nutt.) 1*s.* net.—This elegant little book gives us in modernised form one of the most beautiful of the poems to be found in middle English literature. In so dealing with this work Mr. Coulton has done a great service to students, for the original cannot be easily read without much wearisome toil in scholarship. In this version the original metre is closely followed, and the soul-stirring cry of a father's heart at the grave of his two-years-old infant girl is now easily accessible to all who are interested either in the humanity or the literature of times now long past. Mr. Coulton deserves warm thanks and congratulations upon this effort to make the past live again for us, disclosing as it does the essential oneness of human nature at all periods of history.

The Liverpool Students' Song Book. 164 pp. (Williams and Norgate.) 2*s.* 6*d.* net.—This is a collection upon which the new University of Liverpool has cause to congratulate itself. It is indeed strong in local colour; but it also provides expression for every aspect of life common to undergraduate experience. Some hymns are included, followed by a selection of student songs largely imported from Germany; these, again, by another more especially concerned with the undergraduate as a member of the human family, a number of sailor songs, and some stimulating students to work. The whole, both as regards words and music, is well printed, and the binding is elegant.

History.

Gateways to History. (Arnold.) Book I., Heroes of the Homeland, 112 pp., 10*d.* Book II., Heroes of Many Lands, 142 pp., 1*s.* Book III., Men of England, 192 pp., 1*s.* 3*d.* Book III. A, Men of Britain, 224 pp., 1*s.* 6*d.* Book IV., Wardens of Empire, 224 pp., 1*s.* 6*d.* Book V., *Britain as Part of* Europe, 256 pp., 1*s.* 6*d.* Book VI., The Pageant of the Empires, 256 pp., 1*s.* 6*d.*—We much admire both the idea and the execution of this series. The books are well written, accurate, and pleasant reading. They are well supplied with good pictures. The first consists of simple stories from English history, the second of similar stories taken from a wider range—Confucius, Geneviève of Paris, Mungo Park, to select two or three at random. The third is an English history reader, with special references to Wales (there are chapters, *e.g.*, on Owen Gwynedd and Owen Glendower). The fourth is similar, but with special reference to Scotland and Ireland, with chapters on St. Patrick, Strongbow, Bruce, &c. "Wardens of Empire" begins with Prince Henry of Portugal, Columbus, and other discoverers, and traces the story of the British Empire to the present day. Book V. deals with the ordinary history of Britain and its relations with the Continent, and tells much besides of the history of other countries, forming a useful introduction to world history. Specially interesting is the chapter specifically devoted to the "Holy Roman Empire." Finally, Book VI. sketches, in brief chapters, the empires of the ancient world, and under the title of the "Settlement of the Nations" gives an idea of European history. It is really wonderful how, within such narrow limits, the author has managed to convey so much history that will never need to be unlearned. Of course, the simpler books contain legends and unauthenticated tales, but they are told as such; and the later books are really sound history told in simple and interesting language.

Principles and Methods of Taxation. By G. Armitage-Smith. vi.+195 pp. (Murray.) 5*s.*—To those who have become quite perplexed with our recent fiscal controversies, and who want some clear guidance in matters of taxation, we recommend the study of this little book. It sets forth in clear and readable fashion what is sufficient for the ordinary reader to enable him to understand the principles which should guide him in forming an opinion on matters of immediate concern. First, the need for taxation is expounded, and the objects for which Government requires money are described. Then general principles are laid down, which should guide the choice of methods of taxation. Afterwards, our actual taxes are described and discussed, and their incidence pointed out. This is followed by an account of our national debt and those of other nations. A chapter is given to the finances of India and France for purposes of comparison, another to an account of local taxation, and, finally, there are supplementary tables and a bibliography. The author is an obviously convinced free-trader in the old acceptation of that word, and the breezy coolness which pervades the whole book makes it a good antidote to much of the heated controversy in which the nation was lately involved.

London, Historical and Descriptive. By B. Jonson. 255 pp. (Blackie.) 1*s.* 6*d.*—The title indicates the order of thought in the author's mind. We have here, so far as space permits, a sketch of the history of London involving a description of the places famous in the history. The text is written by one who knows the history well, and has gone to the best sources. It is pleasingly written, and illustrated with a large number of good pictures. There are three appendices, one a list of chief events chronologically arranged, another a chronology of London's architecture, and a third consisting of five London songs set to music in both notations. We do not remember to have seen a better reader for London boys and girls, and we should like every young Londoner to read it.

Save King Alfred. By E. Gilliat. ix.+422 pp. nillan.) *2s. 6d.*—This would please Alice, for it is all conversation, and there are eight illustrations. written by an enthusiast for King Alfred, and it rs to be romance rather than history. Certainly the vour to represent the language of King Alfred's time guage understood by modern English boys and girls s us as rather rash. Still, it will please our sters.

listorical Geography of the British Colonies. By C. P. . Vol. I. The Mediterranean and Eastern Colonies, d by R. E. Stubbs. vii.+304 pp. (Clarendon Press.) This is the second edition (we suppose of the first e only) of a work apparently in four volumes. This nay be described as a handy encyclopædia of its subject. vell supplied with maps, and contains a history (reach- far back in each case as possible) of every possession rotectorate of Great Britain in Asia and the Mediter- n, excepting India and Egypt. Thus, besides accounts e present condition of the British Empire in the we have incidentally accounts of Crusades, apropos prus and Malta, and of religious and race struggles ia, apropos, *e.g.*, of Ceylon and Hong-Kong. It be consulted by every teacher of history or geography.

Geography.

and Australasia. 224+80 pp. (W. and R. bers.) *1s. 9d.*—This book is one of Chambers's aphical Readers of the Continents. It has illustra- many of which we seem to recognise as old friends, naps, some of which are good. The spelling of the is not on all fours with the spelling of the text. liction of the writer is clear, and as a rule simple, n he (or she?) is hardly justified in classing pearls the "treasures of the mighty *deep*." Why, too, ne interpolate a chapter on Ceylon between British a and the rest of India? This, with some of the es and some of the maps, seems to revert to a some- antiquated type of geography, notwithstanding the " imprinted on the title-page.

trated Catalogue of Instruments for Physical Geo-, 1906. Philip Harris and Co., Ltd., Birmingham and n.—Secondary-school teachers should send for this ated catalogue. It is a practical attempt to supplement ggestions of the Board of Education in its recent r to secondary schools. In it the outdoor geographer e able to make acquaintance with the best and st "lines" (we believe this is the correct technical of plane tables, trough compasses, clinometers, land , surveying rods, sextants, hygrometers, *et hoc genus* and if he do not purchase some of them—well, it t be our fault.

Mathematics.

hematical Drawing. By G. M. Minchin and J. B. vii.+145 pp. (Arnold.) *7s. 6d.* net.—It is not very o characterise in a few words the nature of this A considerable portion of it is devoted to the sion of equations whose solutions can be obtained aphical methods; equations of various types are l with great care, and are amply sufficient in r and variety to enable a capable student to attack pes with good hopes of success. The use of dipolar nates is fully explained and illustrated, and numerous les to which these co-ordinates may be applied are ed. The construction of conics from given data, and the applications of projection, furnish many simple and interesting exercises in geometrical drawing; the careful working of these sections would form an admirable discipline for the mathematical student, and would teach him much that is often withheld in the study of geometrical conics. It would be a great advantage to every student of pure, as well as of applied, mathematics to undergo a discipline such as this book provides.

Elementary Algebra. Part I. By P. Ross. viii.+272+ (Answers) 43 pp. (Longmans.) *3s.* or (without Answers) *2s. 6d.*—The range of Part I. of this text-book, which is stated to be "for the use of higher grade and secondary schools," is in general terms from the first notions of generalised arithmetic up to, and including, simultaneous quadratic equations. As is now usual in elementary works, graphical methods are freely used, and the general principles underlying these methods are clearly stated and illustrated. Considerable attention is paid to the important subject of algebraic form, and while arithmetical illustrations and verifications are constantly employed, the logical development of algebra as generalised arithmetic is the dominating idea of the book. The examples for practice are varied and numerous, and contribute very materially to the making of a book which seems to us to be written on the right lines, and to be a good type of what an elementary text-book should be.

Clive's Mathematical Tables. 49 pp. (Clive.) *1s. 6d.*—This collection consists of five-figure tables of logarithms, antilogarithms, natural and logarithmic circular functions and radians, each separate table being printed on two facing pages. In addition to the usual mean differences for a whole line, there are in certain cases mean differences for half the line; but there is, besides, a special device for enabling the calculator to obtain still greater accuracy. How far this special device will be really useful can only be tested by practice; its use demands care, but it is possible that it may be of advantage to some calculators. The type of the figures is good, but the page, as a whole, strikes us as being rather crowded. Of the forty-nine pages, thirty are devoted to explanations of the tables and exercises; though these will no doubt be useful, we think that, as a rule, a collection of tables should contain as little as possible beyond the tables themselves.

Five-Figure Mathematical Tables for School and Laboratory Purposes. By A. du Pré Denning. 21 pp. (Longmans.) *2s.* net.—The collection consists of five-figure tables of logarithms of numbers and reciprocals, of natural and logarithmic sines, cosines, tangents and cotangents, and of squares and cubes; there is also a table of "Useful Data." The arrangement differs in several respects from that in common use. Thus, the logarithms of numbers from 4·00 to 9·99 are given on one page, while on the page facing it are found the antilogarithms from 0·000 to 0·609, the entries being given directly to three significant figures. This method has the undoubted advantage of discarding those parts of the ordinary tables where the differences are considerable, though it has, of course, disadvantages that will be differently estimated by different people. The interval of tabulation for the trigonometric functions is 10′, but the mean difference for 1′ per 10′, instead of the usual 1′ per 60′, is given. It seems a pity that the name of the functions does not appear at the head of the columns on pp. 14 and 16. The tables are clearly printed on a large page, and, so far as a comparatively slight examination shows, strike us as being handy and well arranged.

The Elements of Plane Geometry. By E. J. Edwardes. viii.+218 pp. (Arnold.) 3*s.* 6*d.*—The aim of the writer of this text-book, which is designed to be a substitute for Euclid, is stated to be that of unfolding the elements of plane geometry "in the simplest and easiest manner possible." However laudable the aim may be, we fear there is little agreement as to what this simplest and easiest manner is; in any case we can hardly accept the treatment in the book before us as satisfying our notions of this ideal. Yet the general arrangement of the propositions and the manner of discussing them show considerable independence of judgment, united with simplicity of treatment, and are worthy of more than a passing glance from teachers who are in search of alternatives to the Euclidean tradition. In addition to the subject-matter of Euclid's first six books, there are sections on what used to be known as "Sequel to Euclid": radical axes, anharmonic ratios, &c. The statement on p. 144 as to the incommensurability of π is rather astonishing. What of the work of Lambert or Lindemann?

Trigonometry for Beginners. By J. B. Lock and J. M. Child. viii.+195 pp. (Macmillan.) 2*s.* 6*d.*—Very little knowledge of geometry is presupposed in the users of this text-book, and the practical applications of trigonometry in problems of surveying are treated very fully at an early stage. For pupils who need a course of this kind the book is eminently suitable; tables of the trigonometric ratios and their logarithms are given, and the method of using them carefully explained. The latter part of the book discusses radian measure and the ratios of angles greater than a right angle, so that a student who has mastered the whole work should be ready for various examinations, even though it is not specially designed for examination purposes.

Science and Technology.

The Future in America. By H. G. Wells. 1–359 pp. (Chapman and Hall.) 10*s.* 6*d.* net.—All that Mr. Wells writes is interesting, and it makes the reader think. To dismiss this book by saying that a cursory visit should not have occasioned it is unfair: the writer again and again pleads for it as an impression. To compare it with "The Land of the Dollar" is equally unfair: for Mr. Steevens wrote mainly of the currency question. Mr. Wells is very frank; we hear a great deal about him before we are allowed to get through the wicket at Ellis Island. He has eschewed sights: he did not see Chicago shops: he nearly avoided Niagara: the great parks are barely mentioned: but he saw, as Odysseus did, things and men. For things, he saw and worshipped the turbines at Niagara, the manufacture of Americans at school, the plans for the indefinite enlargement of Boston; and in all of them he saw Mind. For men, he saw an imprisoned "Anarchist," a statesman negro, Maxim Gorky, and—America in little—the President. The impression produced is kaleidoscopic; but there emerge—Force, Mind, Self-sufficiency. Near them are their shadows—want of plan, want of soul, want of heart. The book is direct and painfully honest; and the whole result is a picture of something immensely great—and immensely sad. There are one or two slight errors which will probably be corrected: is it fair for us to ask Mr. Wells not to call "The Princess" "that thing of Tennyson's"?

A Century's Progress in Astronomy. By Hector Macpherson, jun. xi.+245 pp. (Blackwood.) 6*s.* net.—*Though astronomy* has no place in the school curricula of to-day, the discoveries made since Sir Willia commenced his survey of the heavens are of d to many students who are not attracted by oth of science. Mr. Macpherson's volume contains and readable synopsis of what has been a during more than a century of inquiry into celes After describing Herschel's work, separate ch devoted to advances in our knowledge of the planets, comets, and meteors; and then in chapters various aspects of the stars and the stell are considered. A large amount of information the volume, and practically all observers who tributed to astronomical progress since about of the eighteenth century are mentioned. As statement of work done, conclusions arrived at, lations advanced in this period the book is a us possess, and would form a satisfactory introduct more elaborate works by Miss Clerke on the astronomy. There are no illustrations.

Elementary Science of Common Life (Chem W. T. Boone. 252 pp. (W. B. Clive.) 2*s.*—I this little book the author has apparently had in minimum needs of candidates presenting them the examination of the Board of Education in subject, known as subject xxvi., with the nam the title to the volume. This striving after brevi many cases resulted in ambiguity. The style in chapters are written leaves much to be desired, punctuation is often bewildering. Those stud master the contents of the book will have no dif satisfying the examiners of the Board of Educa as an introduction to physics and chemistry th can hardly be recommended.

A Three Years' Course of Practical Chemist George H. Martin and Ellis Jones. With an Intr by Prof. J. B. Cohen. Third Year. viii.+ (Rivingtons.) 2*s.*—The first and second years of t have already been noted in THE SCHOOL WORLD for 1906; the third year's course is designed to acqu schoolboy with the principles of the atomic theory take him far enough in the study of the common metallic elements to enable him to acquire from te the necessary knowledge of the remaining elements Cohen's preface is again included, and, seeing doctrine is far from being followed in the book, well have been omitted. In fact, it is necessary to emphatically against such a book as this being p ward as representing a system of science teaching on practical work and its intelligent application to Almost every page is hopelessly unpractical; the ve experiment may be quoted in illustration. The p told to reduce from 1 to 2 grams of cuprous ox metallic copper in a piece of ignition tubing, th weigh the copper and dissolve it out with nitric There is no idea given as to how much or what str of acid should be used and the beginner who used acid would get himself into serious difficulty. He is instructed to precipitate the boiling copper solution strong caustic soda and wash the precipitate thore with hot water. We fear the pupil would encounter less trouble in dealing with such a large bulk of cipitate. The precipitate is then to be dried, ignited weighed; from the result the student is expected t the weight of oxygen which is combined with 1 gr copper in each of the oxides and obtain a result in ment with Dalton's theory. We venture to think th

first half-dozen trials would give results very far from the truth. Such an experiment, done in a manner to be of any real value, would take several weeks to carry out and would then afford a most excellent piece of manipulative training. Done in such a way as the authors' meagre eight lines of instructions imply, it is worse than useless.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Practical Studies in Schools.

As numerous applications have been made for copies of the report of the committee appointed by the British Association "to report upon the courses of experimental, observational, and practical studies most suitable for elementary schools," the council of the association has reprinted the report.

I shall be pleased to supply copies to inspectors, teachers, and others, on receipt of a stamped addressed envelope.

W. MAYHOWE HELLER,
Secretary to the Committee.

40, Upper Sackville Street, Dublin.

The Board of Education and its Regulations.

IN your issue of November reference is made to the frequent changes of syllabus and regulations which are made by the Board of Education from time to time. It seems perhaps a little out of place to find fault with the Board for making changes when one is about to advocate a change of a more far-reaching character than any that have yet appeared; but the root of the difficulty seems to be in the fact that, in making changes, the Board does not study the real position and demands of the schools. The changes made suggest the idea that some official, after spending a month on filling up schedules and checking registers, feels desirous of asserting his individuality more potently; so he hunts around to see how he can interfere, adds a subject to the syllabus, and exclaims triumphantly: "Who says we are not active at the Board of Education?" An additional subject in an examination for teachers is enough to produce irritation, but quite insufficient to influence the schools; it will be crammed up from a book for the examination, and forgotten as soon as practical work is commenced.

The position, in fact, reminds one of Mr. Dooley's visit to an up-to-date kindergarten, where he saw one lad pulling another lad's hair. "Mary Ellen," said the philosopher to the mistress, "why don't ye take the coal shovel to that little barbarian?" "We don't believe in corporeal punishment," says she; "th' child whose hair is bein' pulled is larnin' patience, an' th' child that's pullin' th' hair is discov'rin' th' footility iv human indeavor." So with us; the schools are learning patience, and we hope that the Board of Education will some day learn the futility of official endeavour, and that it will then allow the schools to be managed in accordance with the demands of those who use them.

Now there is one great and far-reaching change urgently demanded by secondary schools which the Board of Education must make before it can recognise their work with any advantage, viz., the recognition that the term, and not the year, is our unit of work with reference to the formation of classes, promotions, boys entering and leaving the school.

Parents enter and take away boys according to the term, without any reference to the year; masters are engaged and paid by the term, and promotions must necessarily take place according to the term.

Again, boys progress at very unequal rates; in any scheme of work laid down for boys of twelve to sixteen, some clever boys will get through it in two years, whereas others will not complete it in seven: it is as far from the facts to assume that all, or nearly all, will be fit for promotion at the end of a year as to assume that none will be fit for promotion at the end of a term. In assuming that they are, as at present, the Board of Education is assuming a fiction.

If this assumption of the Board were carried out in its entirety, the following would be the result. The upper classes in the Midsummer term would be reduced to about half the numbers with which they commenced in September. The lower classes, in which the new boys entering at Christmas and Easter were placed, would be full to overflowing. All classes would contain boys who were utterly unfit to work together, the clever boys having progressed so much more rapidly than the dull boys that no work could be done which would suit both.

The Board of Education will probably think the substitution of the term for the year too revolutionary; it has got into the groove of working by the year, and does not see how a term unit can be introduced. A few suggestions may therefore be given to show how a term unit may be introduced without producing a scheme too different from that at present in force. These suggestions involve the abolition of the four years' course, and the substitution of a higher standard (present third and fourth year) and a lower standard (present first and second year), and the promotion of boys, not by time, but by fitness.

REGULATIONS.

(1) The headmaster shall forward the curriculum of the whole school showing a progressive course for all boys, commencing with the lowest age at which boys enter.

(2) This curriculum shall show at what "form" or "set" in the school boys pass from the lower to the higher standard, at the average age of about fourteen.

(3) Registers shall be kept showing the attendance of each boy per term, and shall be forwarded to the Board at the end of each term.

(4) The register shall show the following details:—

(*a*) Whether a boy is in a higher "form" or "set" in some subjects than in others.

(*b*) How long each boy has been in his present "set" or "form."

(5) Promotions from one "form" or "set" to another, or from the lower to the higher standard, may be made at any time.

Grants will be paid according to the term attendances, at the rate of n shillings per boy in the lower stage, at the rate of y shillings per boy in the higher stage.

The following points are of less importance, and may be left for future consideration.

The values of n and y; to what extent one or the other would be payable—on a young boy in the higher standard, on an older boy in the lower standard, on a dull boy remaining a long time in a low form; the age or standard at which grants should begin and cease; the amount of absence to disqualify for a grant.

The above is a brief outline of a scheme which would bring the Board of Education requirements into harmony

with the actual state of things existing in schools. At present, schools pretend that they are working by the year when they are really working by the term. Many of the officials at the Board of Education are themselves public-school men, and as in public schools promotion has always been dependent upon those entering and leaving each term, it is difficult to see how they can ever have contemplated that a school could be run on any other lines.

It has been suggested to me by an official of the Board of Education that headmasters generally recommend, or should recommend, to parents that Midsummer is the best time for boys to enter and leave the school. Personally, I do nothing of the kind. I always tell parents that Easter is the best time to enter, because the summer, with its cricket and its open-air life, is the happiest term for a new boy at a large school. As to leaving, the only cases in which we can influence parents are those in which the boys proceed to places of university rank. In a school whence the great majority of boys proceed straight into business, a boy must leave school when the parent obtains a suitable opening for him, and neither the schoolmaster nor the Board of Education has a word to say in the matter.

Catford. C. M. STUART.

A Science Syllabus for Preparatory Schools.

YOUR correspondent, Mr. E. J. Petitfourt, brings forward in your November issue a proposal which is both detrimental to the true interests of science teaching, and which has already been rejected deliberately by a body of science masters well qualified to express an opinion. Some three years ago, immediately after the establishment of the Common Examination for Entrance to Public Schools, there was appointed by the Public Schools Science Masters' Association a sub-committee for the purpose of considering what form of science teaching was best suited to preparatory schools. Of that sub-committee I had the honour to be chairman, and thus (apart from requests received on the present occasion) it devolves upon me to ask you to insert this reply.

I need not enter into a detailed account of the labours of our sub-committee: our report embodied a scheme of work suitable to preparatory schools, and was published in the *Preparatory Schools Review* for March, 1905. The scheme extends over seven pages in double column, and is arranged (1) under the headings "Botany," "Zoology," and "General"; (2) as a working calendar for guidance of teachers. Each section was prefaced with a caution advising the teacher to select only such portions as seemed appropriate to his own circumstances. It was further stated in a list of recommendations that "*definite courses of botany, zoology, physiography, &c., are to be avoided.*" (The italics are my own.) The above will make it clear that Mr. Petitfourt's suggestion has been considered and rejected as unsound. To the best of my recollection, not one voice was raised in favour of such proposals, either at any meeting of the sub-committee or at the general conference of the P.S.S.M.A.

To turn to the reasons on which our decision was based:—(1) At preparatory schools trained science masters are rare, and the work must generally be in the hands of an amateur. There are plenty of amateurs with a taste for some branch of natural history or science, and such will be able to use their own hobby as a successful instrument of education. It is most essential that the work be undertaken *con amore*. (2) The object of preliminary science work is, above all things, to develop the powers of observation and to arouse an intelligent in natural phenomena, but not to impart a *systema* ing. In fact, its very purpose is to establish of picking up the "odds and ends," of which M fourt speaks so contemptuously, at all times, bot out of school. The imposition of a cut-and-dried of science work upon preparatory schools could r in disastrous cramping of opportunity and quer the spirit of inquiry which is inborn in every heal

So far from the science at present approvec managers of the Common Examination havin couraging effect upon the preparatory schools, m ence is the exact opposite. I have marked the candidates for Charterhouse on several occasic speaking generally, the number of those offerin is steadily increasing, and the standard of a improving in a very encouraging degree.

OSWALD H. I

Charterhouse, Godalming.

"Studies in the Sermon on the Mount.

I HAVE read with astonishment the review November number of THE SCHOOL WORLD o Lyttelton's "Studies in the Sermon on the Mount reviewer says, "Mr. Lyttelton has not been ab to shake himself free from the predispositions of hi Why on earth should he? If a clergyman of th of England of Canon Lyttelton's standing is not less of an expert on theology, who is? You do n a professor of natural science, for example, to f training when he writes a scientific treatise agnostic the only sort of person qualified to religious subjects? The *ipse dixi* of your review do not think that He who uttered the Sermo Mount would have said that any Sacraments are to salvation," is an interesting expression of opi if it carries any conviction with it, it is simply t not qualified to review theological books. His the want of "logical clearness" among dignitari Church is as beside the point as it is impertine narrower sense of the word.

W. HERBERT I

Merchant Taylors' School, E.C.

THE reviewer has no remark to make. The re the letter must speak for themselves.

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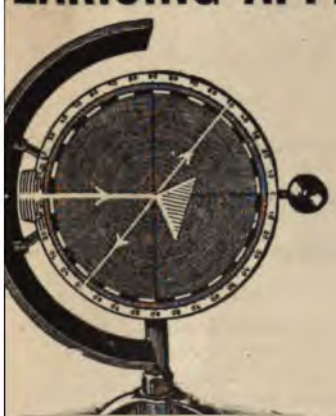

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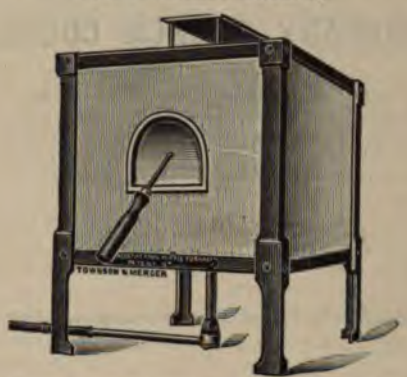

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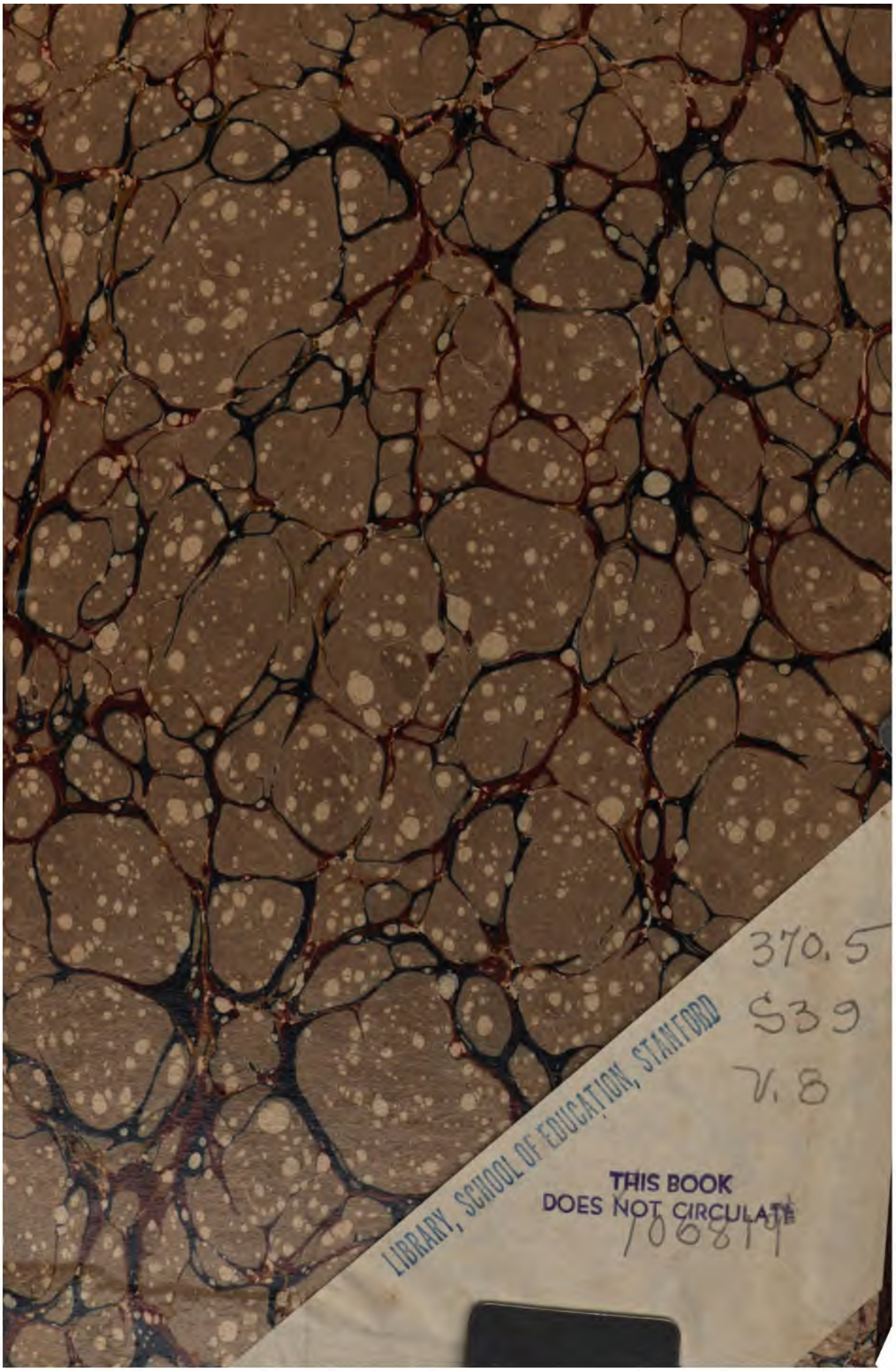
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